



Plant Archives

Journal home page: www.plantarchives.org

DOI Url: <https://doi.org/10.51470/PLANTARCHIVES.2021.v21.no1.100>

STATUS OF INDIAN MEDICINAL PLANTS IN TERMS OF ANTIOXIDANT ACTIVITY (IN VITRO)

Jagriti Rana*, Jyoti Rana, Ved Prakash and Anand Sagar

Department of Biosciences, Himachal Pradesh University, Shimla-171005 (H.P), India

*E-mail: jagritiranag@gmail.com

(Date of Receiving-24-11-2020; Date of Acceptance-01-03-2021)

ABSTRACT

In this paper, literature regarding antioxidant activity (*in vitro*) of Indian medicinal plants was reviewed. Paper also gives an account of family, places of collection, part used, solvent, standards and methods used to define antioxidant potential of most of the Indian medicinal plants, which have been analyzed for free radical scavenging property.

Keywords: Indian medicinal Plants, Antioxidant activity

INTRODUCTION

Medicinal plants are those that are commonly used in treatment and preventing specific ailment and disease, and that are generally considered playing a beneficial role in health care (Srivastava *et al.*, 1996). With 2.4% of world's area, India covers 8% of global biodiversity and one fifth of all the plants found here are utilized for medicinal purposes (Sharma and Thokchom, 2014; Schippmann *et al.*, 1990). Due to the presence of numerous natural compounds like alkaloids, saponins, resins, oils etc. medicinal plants are now considered as chemical factory (Singh, 2005). Reactive oxygen species and free radicals produced endogenously as well as exogenously (Rajurkar and Hande, 2011) are simultaneously degraded by antioxidant defense mechanisms (Auddy *et al.*, 2003) but due to their overproduction or inadequate antioxidant defense mechanism, oxidative stress and oxidative injuries are induced which leads to damaging of various biomolecules and cause several chronic human diseases (Farber, 1994; Hogg, 1998). Researches have been shown that natural antioxidants obtained from the plants are found to have ability to suppress these free radicals and reactive oxygen species. In this paper review of literature regarding antioxidant properties of Indian medicinal plants was discussed chronologically from 1999.

Review of literature

Shylesh and Padikkala (1999) examined antioxidant activity of *Emilia sonchifolia* DC. by using Hydroxyl radical scavenging activity and Superoxide radical scavenging activity, and found that both juice and extract of the *E. sonchifolia* leaves inhibit hydroxyl and superoxide radical formation *in vitro*. Alcoholic extract of *Mucuna pruriens* Linn seeds was investigated for its antioxidant property by Tripathi and Upadhyay (2001). The effect of extract was observed by FeSO₄ induced lipid peroxidation, degree of nitroblue tetrazolium reduction

and by hydroxylation of salicylate. The effect of ethanol rhizome extract of *Smilax china* Linn. was also studied on hydroxyl and superoxide radicals for estimating its antioxidant property (Tripathi *et al.*, 2001). Plant rhizome extract shows, concentration dependent protection against FeSO₄ induced lipid peroxidation and also show scavenging activity on superoxide and hydroxyl radicals; however, it shows more efficiency towards superoxide than hydroxyl radicals.

Antioxidant property of twelve Indian medicinal plants was evaluated by using Free radical scavenging activity (DPPH) and Lipid peroxidation assay (Jadhav and Bhutani, 2002). Methanol extracts of *Terminalia arjuna* was found to be most active, followed by *Terminalia bellerica* in case of Free radical scavenging activity, while *Centella asiatica* and *Hypericum perforatum* in case of Lipid peroxidation assay. In the same year, Siddhuraju *et al.*, (2002) reported the antioxidant property of *Cassia fistula* L. (stem bark, leaves, flowers and mature fruit pulp) by applying some methods like, total phenolic content, Thiocyanate method, Liposomes preparation, Reducing power assay, Superoxide radical scavenging method and DPPH scavenging assay. Among all the plant extracts, alcoholic stem bark extract showed highest antioxidant potential, which might be due to the presence of high phenolic content, and flower and pulp showed low activity might be because they contained anthraquinones, polyphenols and other prooxidants.

Sen *et al.*, (2002) studied the antioxidant activity of *Pluchea indica* Less both in *in vitro* and *in vivo*. They found that in case of glucose oxidase induced paw oedema, the methanol root extract of the plant produces significant anti-inflammatory activity. Extract also showed superoxide and hydroxyl radicals scavenging activity, and inhibited hydrogen peroxide induced lysis of erythrocytes, CCl₄ induced lipid peroxidation and dioxygenase activity. Antioxidant properties of *Punica*

granatum cv. Ganesha was published by Singh *et al.*, (2002). By using β -carotene-linoleate and DPPH free radical scavenging activity method, they investigated methanol, ethyl acetate and aqueous extracts of peels and seeds of the plant and conclude that methanol extract of peels exhibited highest activity among all of the extracts.

Aqueous extracts from different parts of *Momardica charantia* Linn, *Glycyrrhiza glabra*, *Acacia catechu* and *Terminalia chebula* were examined for their antioxidant potential by Naik *et al.*, (2003) using different methods (γ -Radiolysis, Estimation of superoxide dismutase enzyme activity and estimation of antioxidant capacity of the extracts by cyclic voltammetry and pulse radiolysis) and concluded that the *Terminalia chebula* among four plants showed maximum inhibition of radiation induced lipid peroxidation, free radical scavenging activity and maximum value of ascorbate equivalents, and it also restore superoxide dismutase activity. Hence contained high antioxidant property. From different agroclimatic regions (India, Nicaragua and Niger) leaves of *Moringa oleifera* Lam. were collected to investigate its antioxidant properties by Siddhuraju and Becker (2003). Water, aqueous methanol and aqueous ethanol extracts of *M. oleifera* leaves were studied by β -carotene-linoleic acid system, reducing power, Superoxide radical scavenging, Linoleic acid, Liposomes preparation and DPPH radical scavenging methods, and among three different samples, methanol and ethanol extracts from India reported highest antioxidant activity. Negi *et al.*, (2003) examined the ethyl acetate, acetone, methanol and aqueous extracts of *Punica granatum* cv. Ganesha for their antioxidant potential by using Phosphomolybdenum method and found that the methanol extract presented highest antioxidant activity and water extract lowest activity compared to other extracts.

Fresh and dry stem extracts (ethyl acetate, methanol, water and n-hexane) of *Cissus quadrangularis* L. were evaluated by DPPH radical scavenging assay and β -carotene linoleic acid model method to find out their antioxidant property and it concluded that ethyl acetate extract of fresh stem exhibited highest activity followed by ethyl acetate dry stem extract among all the extracts of dry and fresh stem extracts of *C. quadrangularis* (Murthy *et al.*, 2003). In the same year antioxidant activity of *Desmodium gangeticum* (L.) DC., was also reported by Govindarajan *et al.*, (2003) by applying DPPH radical scavenging assay, Nitric oxide scavenging, assay of lipid peroxidation, Ferryl-bipyridyl assay and Hypochlorous acid scavenging method and concluded that *D. gangeticum* has a significant antioxidant potential. For the first time three medicinal plants i.e. *Sida cordifolia* Linn, *Cynodon dactylon* Linn and *Evolvulus alsinoides* Linn were evaluated for antioxidant potential by Auddy *et al.*, (2003). Evaluation was carried out by using ABTS radical cation decolorization assay which revealed high potency of *S. cordifolia* ethanol extract ($IC_{50}=16.07 \mu\text{g/mL}$) than other plants ethanol extract and water infusion of *E. alsinoides* ($IC_{50}=172.25 \mu\text{g/mL}$) than other plants infusion.

Certain Indian medicinal plants were selected for Nitric oxide scavenging activity and it is found that *Alstonia scholaris* was most potent, followed by *Cynodon dactylon* and *Morinda citrifolia* (Jagetia and Baliga, 2004). Tilak *et al.*, (2004) evaluated the antioxidant properties of *Plumbago zeylanica* aqueous and alcoholic extracts by using DPPH radical scavenging assay, ABTS radical scavenging assay and FRAP assay, and concluded that in case of DPPH and FRAP, ethanol extract showed more efficiency while in case of ABTS, aqueous extract recorded highest activity. Antioxidant activity of *Annona squamosa* Linn. was evaluated *in vitro* by antilipid peroxidation, ABTS radical scavenging assay, DPPH radical scavenging assay, scavenging of nitric oxide radical and scavenging of superoxide radical by Shirwaikar *et al.*, (2004) and found better activity in case of ABTS and DPPH, while moderate in remaining assays. By estimating SOD, Cyclic voltammetry, Xanthine-oxidase assay, DPPH assay antioxidant potential of *Terminalia chebula* was examined for antioxidant potential (Naik *et al.*, 2004) and results made *T. chebula* a potent antioxidant.

Aqueous and methanol extracts of *Cassia fistula* Linn. bark was investigated by Ilavarasan *et al.*, (2005) for antioxidant activity and in the results, it was found that both the extracts inhibited lipid peroxidation induced by CCl_4 and FeSO_4 , and also had significant antioxidant activity in DPPH, Hydroxyl radical and Nitric oxide scavenging assays. Methanol seeds extract of *Mucuna pruriens* was investigated by Rajeshwar *et al.*, (2005) for antioxidant potential and by using Reducing power assay, and scavenging activities of DPPH radical, hydroxyl radical, nitric oxide radical, superoxide anion radical, H_2O_2 radical, they found that plant has significant antioxidant property. Methanol extract of *Bauhinia racemose* Lam. was evaluated for antioxidant property by Kumar *et al.*, (2005). In the evaluation, activity of the extracts increased in concentration dependent manner and it was also found that the extract inhibited the superoxide and hydroxyl radical generation.

Bajpai *et al.*, (2005) evaluated antioxidant property of some medicinal plants by using β -carotene and Linoleic acid assay and reported that *Terminalia arjuna*, *Terminalia bellerica*, *Terminalia chebula*, *Terminalia muelleri*, *Phyllanthus emblica* and *Syzygium cumini* showed high antioxidant activity among all the tested plants. Different extracts of *Hippophae rhamnoides* L. seeds were examined by Negi *et al.*, (2005) for antioxidant property by applying Liposome model system, determination of reducing power and scavenging of DPPH radical methods, and found that methanol extract exhibited highest antioxidant activity. *Syzygium cumini* (L.) fruit was evaluated for antioxidant potential and found to scavenged hydroxyl, superoxide and DPPH free radicle (Banerjee *et al.*, 2005).

Underground parts of *Sphaeranthus indicus* (Linn) was analyzed for antioxidant potential by Shirwaikar *et al.*, (2006) and they came up with the results that extract showed significant scavenging activity of ABTS, DPPH and nitric oxide radical while moderate in case of remaining

assays. Twelve traditionally used medicinal plants of India were tested by Aqil *et al.*, (2006), by availing FTC, TBA and DPPH free radical scavenging assay. Among twelve plants methanol crude extract of *Lawsonia inermis* L. was found most active. Aqueous extracts of *Coleus aromaticus* Benth. leaves were studied for antioxidant property by using various *in vitro* methods and results showed that the extract reported significant nitric oxide and superoxide scavenging property with reducing power and ferrous ion chelating ability, also showed concentration dependent DPPH radical scavenging activity (Kumaran and Karunakaran, 2006).

Emblica officinalis Gaertn. was also found to has antioxidant potential by employing DPPH and ABTS assays (Scartezzini *et al.*, 2006). Hydro alcoholic seed extract of *Nelumbo nucifera* Gaertn. presented low IC₅₀ values for both DPPH and Nitric oxide assays, which were less than standard (rutin) used, thus indicating strong antioxidant potential (Rai *et al.*, 2006). Antioxidant activity of *Phyllanthus niruri* aqueous and methanol leaves extracts were examined by Harish and Shivanandappa *et al.*, (2006) and reported that both the extracts of leaves exhibited DPPH scavenging activity with reactive oxygen species inhibition and also inhibition of membrane lipid peroxidation.

Prakash *et al.*, (2007) analyzed twenty-five plants for total phenolic content test and the plants which showed promising phenolic contents, were screened for free radical scavenging activity and among selected plants with selected parts, barks of *Casuarina equisetifolia*, *Cinnamomum zeylanicum* and fruits of *Lawsonia inermis* showed significant results. *Bergia suffruticosa* (Delile) Fenzl was also examined for antioxidant potential by using DPPH free radical scavenging activity, assay for Superoxide radical scavenging activity and measurement of Reducing power (Anandjiwala *et al.*, 2007) and concluded that methanol whole plant extract exhibited very good free radical scavenging activity in dose dependent manner. Bark extracts of *Careya arborea* Roxb, prepared from six different solvents were evaluated for antioxidant activity by Senthilkumar *et al.*, (2007) and it was found that methanol extract showed lowest IC₅₀ value in DPPH free radical, Hydrogen peroxide, Nitric oxide, Superoxide and Lipid peroxidation inhibition methods while aqueous extract showed lowest IC₅₀ value in case of hydroxyl radical by deoxyribose method, aqua methanol also showed lowest IC₅₀ value in case of ABTS radical scavenging method.

Nagulendran *et al.*, (2007) also published *in vitro* antioxidant property of *Cyperus rotundus* rhizome with the conclusion that extract showed activity in concentration dependent manner. Kumaran and Karunakaran, (2007) investigated five different species of *Phyllanthus* collected from Chennai for their antioxidant potential. *Phyllanthus debilis* was reported to have highest activity among five species. Thirteen Medicinal plants collected from India's Western Ghats were analyzed for antioxidant properties using different methods and in most of the methods, *Coleus*

aromaticus Benth showed lowest IC₅₀ value among all other plant extracts (Badami and Channabasavaraj, 2007).

By using DPPH and Superoxide scavenging activity, free radical scavenging property of *Achyranthes aspera* Linn was analyzed by Edwin *et al.*, (2008) and in the result activity of the aqueous leaves extract were found to be higher than ethanol extracts. Kumari and Kakkar (2008) examined bark extracts of five medicinal plants and reported their antioxidant property. Among all the plants *Crataeva nurvala* was found to have highest SOD mimetic activity, Lipid peroxidation inhibitory activity and ABTS scavenging activity while *Aegle marmelos* has highest nitric oxide quenching activity. Some selected medicinal plants of India were also investigated by Kumar *et al.*, (2008) for antioxidant potential by employing lipid peroxidation assay in which *Albizia amara* reported highest lipid peroxidation inhibition activity followed by *Cassia fistula* and *Cassia auriculata*.

Different extracts of different parts of *Costus speciosus* was evaluated by using DPPH, ABTS and Hydroxyl radical scavenging activity methods, for antioxidant potential (Vijayalakshmi and Sarada, 2008) and in the result methanol extracts was found to exhibited strongest free radical and hydroxyl scavenging activity. Gupta *et al.*, (2008) investigated *in vitro* antioxidant activity of different extracts of *Oroxylum indicum* (L.) Vent. leaves by using DPPH radical scavenging method and found that the ethyl acetate extract of leaves exhibited best scavenging effect than other solvents. *In vitro* antioxidant property of methanol extracts of five medicinal plants known as Shankhapushpi was studied by using DPPH radical scavenging activity, Superoxide radical scavenging activity, Metal chelating effect and determination of total antioxidant capacity, and out of these five medicinal plants, *Canscora decussata* expressed highest activity except in case of metal chelating effect, where *Evolvulus alsinoides* showed lowest IC₅₀ value (Nag and De, 2008).

Baravalia *et al.*, (2009) examined the leaf extracts of *Diospyros ebenum* Roxb. for their antioxidant property using DPPH radical scavenging activity and found that plant showed 20 µg/ml, IC₅₀ value. By using same method, twelve Northeast Indian medicinal plants were evaluated for antioxidant potential. Among tested plants *Oroxylum indicum* Vent. was found to have highest activity followed by *Ipomoea aquatic* Forsk. and *Moringa oleifera* Forsk. (Kumar *et al.*, 2009). In the same year antioxidant property of aqueous extract of four Indian medicinal plants was studied by Sharma *et al.*, (2009) by using Free radical absorbing power assay and found that *Emblica officinalis* exhibited highest antioxidant property than other plant extracts. Ethanol extract of *Caesalpinia bonducella* F. seeds was analyzed for antioxidant property by using four methods and plant extract showed increase in activity by a dose dependent manner in each method (Shukla *et al.*, 2009). Antioxidant potential of methanol extract of *Gmelina arborea* Roxb. stem bark was evaluated by using various *in vitro* methods, which concluded that plant extract possessed significant free radical

scavenging activity (Patil *et al.*, 2009). By using DPPH radical scavenging activity, Veeru *et al.*, (2009) examined methanol extracts of some Indian medicinal plants and concluded that among tested plants *Ocimum sanctum* L. methanol leaf extract showed lowest IC₅₀ value.

Kalaivani and Mathew (2010) subjected different solvent extracts of *Acacia nilotica* (L.) Wild. Ex Delile leaf for antioxidant potential and concluded that ethanol extract exhibited promising ability to act as antioxidant agent. Aerial parts of *Hedyotis corymbosa* (L) Lam. was examined *in vitro* for antioxidant property by using different methods *viz.* DPPH radical scavenging activity, reducing power, ABTS radical scavenging assay, Nitric oxide radical scavenging activity and Hydroxyl radical scavenging activity, and found to have significant antioxidant activity (Sasikumar *et al.*, 2010). Antioxidant potential of methanol and aqueous stem extracts of *Achyranthes aspera* Linn. was screened by Priya *et al.*, (2010) by applying DPPH radical scavenging activity and found that methanol extract showed high antioxidant potential than aqueous extract. Antioxidant potential of some selected medicinal plants from Gujarat was investigated by Patel *et al.*, (2010) and by using DPPH radical scavenging assay they concluded that stem extract of *Kigellia pinnata* exhibited highest radical scavenging potential followed by leaf of *Hibiscus cannabinus*.

Carum copticum (L.) was also screened for antioxidant activity and methanol fruit extract was found to have better potential than different solvent extracts (Zahin *et al.*, 2010). By using various *in vitro* radical scavenging methods Raja and Pugalendi (2010) examined aqueous leaf extract of *Melothria maderaspatana* (Linn.) Cogn. for radical scavenging potential and concluded that extract showed effective free radical scavenging property. Certain medicinal plants collected from Palakkad, Kerala, were subjected to antioxidant screening by following DPPH assay (Sini *et al.*, 2010). Results indicated that *Trianthema decandra* appeared with most active agent followed by *Plumbago zeylanica* and *Capparis zeylanica*.

Two Indian medicinal plants *viz.* *Adhatodam vasica* Nees and *Sesbania grandiflora* (L.) Pers (Padmaja *et al.*, 2011) and three *viz.* *Tinospora cordifolia*, *Piper longum* and *Bauhinia variegata* Linn. (Mishra, *et al.*, 2011) were examined for their antioxidant potential by using different antioxidant methods and in the result concluded that the tested plants exhibited significant antioxidant activity. Roy *et al.*, (2011) studied antioxidant potential of methanol and aqueous extracts of *Dalbergia sissoo* Roxb. stem bark by applying different methods and came up with the result showing stronger free radical scavenging property of aqueous extract than methanol extract. Narayanaswamy and Balakrishnan (2011) investigated the aqueous and ethanol extracts of thirteen medicinal plants by following DPPH radical scavenging assay and found that *Hyptis suaveolens* and *Ocimum basilicum* leaf extracts showed strongest antioxidant activity in case of aqueous and ethanol solvent, respectively. In case of *Piper cubeba* and *Piper nigrum*, ethanol extract of *P. cubeba* demonstrated

highest percentage of antioxidant property than its aqueous and methanol extracts and all the three extracts of *P. nigrum* (Nahak and Sahu, 2011). Twelve genotypes of *Zizyphus mauritiana* Lamk. i.e. Indian jujube cultivated in India were tested for their antioxidant potential by using various *in vitro* methods and found to have significant antioxidant potential (Koley *et al.*, 2011).

Methanol leaf extract of *Indigofera cassioides* Rottl. Ex. DC. was evaluated by seven different *in vitro* assays, for their antioxidant activity and found to have concentration dependent antioxidant activity (Kumar *et al.*, 2012). Methanol and hexane extracts of fruit pulps and seeds of *Cassia fistula* Linn. were examined by Irshad *et al.*, (2012), for their antioxidant potential and came up with the result that methanol extracts of plant parts presented stronger activity than hexane extracts, as methanol pulp extract showed highest activity followed by methanol seed extract. Venkatachalam and Muthukrishnan (2012) analyzed antioxidant potential of ethanol leaf extract of *Desmodium gangeticum* L. by using eight different methods and concluded that plant exhibited ability of free radical scavenging.

Screening of ethanol extracts of four medicinal plants, individually and in herbal combination for their free radical scavenging potential by using DPPH radical scavenging assay and Reducing power assay was performed by Padmanabhan and Jangle (2012). Herbal combination extract was found to have strongest activity while in case of individual investigation *Zingiber officinalerhizom* was most active. *Habenaria edgeworthii* Hook. f. ex. Collett, rare Himalayan medicinal orchid was also investigated for their antioxidant potential by using various methods (Giri *et al.*, 2012). Chaudhuri *et al.*, (2012) tested *Withania somnifera* (L.) Dunal methanol root extract, commonly known as Ashwagandha for antioxidant ability by applying nine *in vitro* methods and found that plant may serve as antioxidant agent, since extract showed significant activity.

Sen *et al.*, (2013) performed experiments by following eight different methods to analyzed antioxidant potential of *Meyna spinosa* Roxb. ex Link leaves. Different extracts of leaves were prepared out of which methanol leaves extracts possessed highest potential than other solvents extracts. By using DPPH radical scavenging activity and Reducing power assay Soni and Sosa (2013) investigated methanol leaf extracts of five medicinal plants from Andhra Pradesh, India and concluded that among five plants extracts *Mentha spicata* showed highest potential for antioxidant activity. *Aerva lanata* (L.) Juss. Ex Schult. stem extract was examined for antioxidant potential and found to have high free radical scavenging ability, reducing power activity, Metal chelating activity and inhibition ability from DNA damaging, thus can be serve as source of antioxidant products (Kumar *et al.*, 2013). Antioxidant activity of root extracts of *Imperata cylindrical* was tested by using Nitric oxide scavenging method, reducing power assay and Hydrogen peroxide scavenging assay, and plant was found to be have significance antioxidant

activity (Padma *et al.*, 2013). Twenty-six medicinal plants from Himachal Pradesh were evaluated by DPPH radical scavenging activity and FRAP assay and among all the plants methanol leaf extract of *Taxus baccata* L. was found to have maximum free radical scavenging property followed by *Syzygium cumini* (L.) Skeels bark extract (Guleria *et al.*, 2013).

Methanol and aqueous extracts of gall induced leaves of *Syzygium cumini* were examined for antioxidant activity by Eshwarappa *et al.*, (2014). In the result they concluded that methanol extract showed higher activity than aqueous extract and even higher than standard Ascorbic acid. Flavonoids isolated from stem bark of *Albizia lebbeck* Benth. was evaluated by DPPH radical scavenging activity and found to have strong free radical scavenging activity (Ahmed *et al.*, 2014). Alcoholic extracts of seven medicinal plants leaves were evaluated for antioxidant activity by Kaur and Mondal (2014). Among all the tested plants *Citrus aurantifolia*, demonstrated highest antioxidant activity followed by *Ocimum sanctum* and *Catharanthus roseus*. By using DPPH free radical scavenging activity Balakrishnan *et al.*, (2014) evaluated *Cymbopogon citratus* and Mathew and Subramanian (2014) examined twenty Ayurvedic medicinal plants for their free radical scavenging ability. Shaikh *et al.*, (2014) also investigated some medicinal plants for their antioxidant capacity by using DPPH radical scavenging activity, Hydroxyl radical scavenging activity and Superoxide radical scavenging activity.

Methanol leaf extract of *Carissa carandas* Linn. was analyzed for their antioxidant potential by using various *in vitro* methods and showed concentration dependent free radical scavenging property (Verma *et al.*, 2015). Organic and aqueous extracts of *Annona squamosa* Linn. leaves were also tested by different methods for antioxidant potential and the results came out in the favor of methanol extract which showed highest potential than other solvent extracts (Kalidindi *et al.*, 2015). Antioxidant property of methanol extracts of callus and stigma of *Crocus sativus* L. Kashmirianus c.v. was examined by Parray *et al.*, (2015) by using various *in vitro* methods and concluded that stigma extract exhibited better activity in terms of four methods while callus extract in terms of lipid peroxidation method.

Antioxidant activity of different extract of *Curcuma caesia* Roxb. rhizome was examined by using DPPH radical scavenging activity and Reducing power assay by Devi *et al.*, (2015). Result concluded that among all the extracts ethanol extract showed strongest potential as antioxidant agent. Bhattacharyya *et al.*, (2015) also investigated antioxidant property of different extracts of *Dendrobium thyrsiflorum* stem, leaf and root of mother as well as *in vitro* raised plants, by applying DPPH radical scavenging activity and FRAP assay. In the result they found that methanol extract of *in vitro* raised indirect shoot organogenesis was found most active than other *in vitro* plant and stem, leaf and root of mother plant, also the methanol leaf extract exhibited highest potential among

all the extract of leaf, stem and root of mother plants. Antioxidant property of *Ocimum canum* Sims. leaves were also evaluated by Selvi *et al.*, (2015), using various methods. Dose dependent manner was observed in all the methods.

Screening of *Erythrina stricta* Roxb. stem bark for free radical scavenging activity was performed by following DPPH radical scavenging activity and FRAP assay Akter *et al.*, (2016). Methanol leaf extracts of some selected medicinal plants were analyzed for free radical scavenging activity by using DPPH radical scavenging activity, Reducing power assay and ABTS radical cation decoloration assay (Singh *et al.*, 2016). Kousalya and Bai (2016) also tested the antioxidant potential of *Canscora decussata* (Roxb.) Roem. & Schult. by using various *in vitro* methods. *Simarouba glauca*, *Syzygium cumini* and *Terminalia chebula* were evaluated for their antioxidant potential by Santhosh *et al.*, (2016), Singh *et al.*, (2016) and Saha and Verma, (2016), respectively. They used different radical scavenging methods for analysis and found that selected plants showed possibility of potential antioxidant agents.

Ghagane *et al.*, (2017) analyzed leaf extracts of *Leea indica* (Burm.f.) Merr prepared in different solvent for antioxidant activity. Nile *et al.*, (2017) also examined antioxidant activity of some Indian medicinal and aromatic plants by pursuing DPPH radical scavenging activity, Reducing power assay and β -Carotene-linoleic acid assay. Rana *et al.*, (2017) studied antioxidant potential of *Solanum indicum* Linn. by applying DPPH radical scavenging activity and Reducing power assay. In the same year Prakash *et al.*, (2017) also investigated antioxidant potential of *Prunus persica* (L.) BATSCHE and *Vitex negundo* by using same methods.

Erigeron alpinus L., *Gentianella moorcroftiana* Wall. ex G. Don, *Trigonella foenum-graecum* Linn. and *Anethum graveolens* Linn. were analyzed for their free radical scavenging property by using DPPH radical scavenging activity (Sagar *et al.*, 2018). Two medicinal plants collected from BHU campus were also studied for their antioxidant property by using various radical scavenging methods (Keshari *et al.*, 2018). By following DPPH radical scavenging activity and Ferric reducing assay methods Dhanya Shree *et al.*, (2018) investigated antioxidant potential of *Smilax zeylanica* L.

Antioxidant property of different parts of *Arisaema jacquemontii* Blume, *Clematis grata* Wall. *Coriandrum sativum* L. and *Spilanthes acmella* L. was investigated by Bala *et al.*, (2019), Kumari *et al.*, (2019), Jeya *et al.*, 2019 and Thakur *et al.*, (2019), using DPPH free radical scavenging assay. Bhatt *et al.*, (2019) selected some plants from Junagadh, Gujarat for their antioxidant activity analysis and concluded that among all plants and different solvent extracts, aqueous extract of *Peltophorum pterocarpum* (DC.) K. Heyne and *Syzygium cumini* (L.) Skeels leaves presented highest DPPH radical scavenging ability while all the extracts of *Bauhinia variegata* L.

Table 1: List of some medicinal plants tested in vitro for antioxidant activity

Plant Name/ Family	Place	Part	Solvent	Standard	Method	References
Acanthaceae						
<i>Athrotadam vasica</i> Nees	Andhra university Campus, Visakhapatnam	L	Aq	Ascorbic acid (1,2,3,5), Vitamin E (6), BHT (1,2,3), EDTA (4)	1. DPPH radical scavenging assay 2. Hydroxyl radical scavenging activity 3. Lipid peroxidation assay 4. Metal chelating activity 5. Total antioxidant activity 6. Reducing power assay	Padmaja <i>et al.</i> , 2011
<i>Andrographis paniculata</i>	India	AP	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Justica glauca</i>	Attapady area, Palakkad, Kerala	L, S	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
Aizoaceae						
<i>Trianthema decandra</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
Alliaceae						
<i>Allium sativum</i> L.	India	Bu	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
Aloaceae						
<i>Aloe vera</i> (L.) Burm. f.	HGHRI, Joginder Nagar, Mandi	FL	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Aloe vera</i> L. Burm f.	Loni and adjoining areas, Maharashtra	L	Et (80%)	BHT (1,2), Vitamin C (1,2)	1. DPPH radical scavenging activity 2. Reducing power assay	Padmanabhan and Jangle, 2012
Amaranthaceae						
<i>Achyranthes aspera</i>	Kodaikanal (South India)	-	-	BHT	Inhibition of lipid peroxidation	Kumar <i>et al.</i> , 2008
<i>Achyranthes aspera</i> L.	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Achyranthes aspera</i> Linn	Mandsaur, MP	L	Et, Aq	Ascorbic acid (1,2)	1. DPPH scavenging activity 2. Superoxide scavenging activity	Edwin <i>et al.</i> , 2008
<i>Achyranthes aspera</i> Linn	SFA, Chittoor, AP	S	Met, Aq	Gallic acid	DPPH radical scavenging activity	Priya <i>et al.</i> , 2010
<i>Achyranthes aspera</i> Linn.	Sonitpur, Assam	WP	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Achyranthus aspera</i> Linn.	Marathwada, Maharashtra	R	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017

continued...

<i>Aerva lanata</i> (L.) Juss. Ex Schult.	SFA, Chittoor, AP	S	Aq	-	1. DPPH radical scavenging activity 2. Metal chelating activity 3. Reducing power assay 4. DNA damage inhibition efficiency	Kumar <i>et al.</i> , 2013
<i>Amaranthus caudatus</i> L.	ARC, NBRI, Lucknow	L	Met	-	DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009
<i>Spinacia oleracea</i>	Local market, Gujarat	L	Met	Ascorbic acid (1), BHT (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Soni and Sosa, 2013
Anacardiaceae						
<i>Buchanania lanzan</i> Spreng.	Lucknow	SB	50% Et	Catechin(1,2,3,4)	1. SOD mimetic activity 2. LPO inhibitory potential 3. NO quenching capacity 4. ABTS assay	Kumari and Kakkar, 2008
<i>Mangifera indica</i> L.	India	L	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
Annonaceae						
<i>Annona squamosa</i> L.	Junagadh, Gujarat	L	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Annona squamosa</i> Linn.	Dharwad, Karnataka	L	Aq, Chlo, Met	Ascorbic acid (1-4)	1. DPPH radical scavenging activity 2. Hydrogen peroxide scavenging activity 3. Nitric oxide radical scavenging activity 4. Reducing power assay	Kalidindi <i>et al.</i> , 2015
<i>Annona squamosa</i> Linn.	Painkulam, Kanyakumari, TN	L	95% Et	-	1. <i>In vitro</i> antilipid peroxidation 2. ABTS radical scavenging assay 3. DPPH radical scavenging assay 4. Scavenging of nitric oxide radical 5. Scavenging of superoxide radical	Shirwaikar <i>et al.</i> , 2004
<i>Polyalthia longifolia</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
Apiaceae						
<i>Anethum graveolens</i> Linn.	Joginder Nagar, Mandi, HP	S, Se	Met, Act	Ascorbic acid	DPPH radical scavenging activity	Sagar <i>et al.</i> , 2018
<i>Carum copticum</i> (L.)	Aligarh	F	Et, Met, Act, Bnz, EtyAt, PetEth	L-Ascorbic acid, BHT	1. DPPH radical scavenging assay 2. Total antioxidant capacity by phosphomolybdenum method	Zahin <i>et al.</i> , 2010
<i>Centella asiatica</i>	India	AP	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Centella asiatica</i> L.	Sonitpur, Assam	WP, L	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Centella asiatica</i> (L.) Urban	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013

continued...

<i>Centella asiatica</i> Linn.	NIPER, Punjab	WP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
<i>Centella asiatica</i> Linn.	Kerala	WP	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Coriandrum sativum</i> L.	HGHRI, Joginder Nagar, Mandi	F	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Coriandrum sativum</i> L.	Uzhavvar sandhai market, TN	Se	Aq	Ascorbic acid	DPPH radical scavenging activity	Jeya <i>et al.</i> , 2019
<i>Coriandrum sativum</i> Linn.	Kerala	L	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
Apocynaceae						
<i>Alstonia scholaris</i>	Udupi, Karnataka	B	85% Et	-	Assay of nitric production	Jagtiea and Baliga, 2004
<i>Alstonia scholaris</i> R. Br.	Sonitpur, Assam	SB, L, MJ	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Calotropis procera</i>	Vallabh Vidyanagar, Gujarat	S, L	Met	BHT	DPPH radical scavenging assay	Patel <i>et al.</i> , 2010
<i>Carissa carandas</i> Linn.	Jaitpura, Jaipur, Rajasthan	L	Met (10%)	Ascorbic acid (1-4)	1. DPPH radical scavenging activity 2. Total antioxidant activity 3. Scavenging of Hydrogen peroxide 4. Reducing power assay	Verma <i>et al.</i> , 2015
<i>Catharanthus roseus</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
<i>Catharanthus roseus</i>	Botanical Garden of BHU, Varanasi	L	Aq	Ascorbic acid (1,2,3,4,5)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity assay 3. Superoxide radical scavenging activity assay 4. Hydrogen peroxide scavenging activity assay 5. Reducing power	Keshari <i>et al.</i> , 2018
<i>Chonemorpha fragrans</i> (Moon) Alst	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Rauwolfia serpentina</i> Linn.	Kerala	R	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Rauwolfia serpentina</i> Benth. ex Kurz	Marathwada, Maharashtra	R	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-limoleci acid assay	Nile <i>et al.</i> , 2017
Araceae						
<i>Acorus calamus</i>	India	Rh, L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Acorus calamus</i>	BGMCC, Bangalore	L	Aq, Et		DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011

continued...

<i>Acorus calamus</i> L.	HGHRI, Joginder Nagar, Mandi	R	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Acorus calamus</i> Linn.	Kerala	Rh	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Arisaema jacquemontii</i> Blume	Solang vally, Manali, HP	DF, T, L	Aq, Act, Met, Chlo	Ascorbic acid	DPPH radical scavenging activity	Bala <i>et al.</i> , 2019
Aristolochiaceae						
<i>Aristolochia indica</i> Linn.	Marathwada, Maharashtra	R	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
Asclepiadaceae						
<i>Gynnenema sylvestre</i>	India	L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Pergularia daemia</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Secamone emetica</i>	Attapady area, Palakkad, Kerala	F, L	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Tylophora indica</i>	Udupi, Karnataka	-	50% Et	-	Assay of nitric production	Jageta and Baliga, 2004
Asparagaceae						
<i>Asparagus adscendens</i> Roxb.	HGHRI, Joginder Nagar, Mandi	R	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Asparagus racemosus</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
<i>Asparagus racemosus</i> Willd.	HGHRI, Joginder Nagar, Mandi	R	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Chlorophytum tuberosum</i>	India	Tu	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
Asteraceae						
<i>Cichorium intybus</i> Linn.	Marathwada, Maharashtra	WP	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
<i>Cichorium intybus</i> L.	India	R	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Eclipta alba</i> Hassk.	Sonitpur, Assam	L	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Eclipta alba</i> L.	ARC, NBRI, Lucknow	L	Met	-	DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009

continued...

<i>Emilia sonchifolia</i> DC.	Kerala	L	70% Met	Curcumin	1. Hydroxyl radical scavenging activity 2. Superoxide radical scavenging activity	Shylesh and Padik- kala, 1999
<i>Erigeron alpinus</i> L.	Beeling, Lahaul-Spiti, HP	WP	Met, Act	Ascorbic acid	DPPH radical scavenging activity	Sagar <i>et al.</i> , 2018
<i>Gynura conyza</i> Cass.	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Matricaria chamomilla</i>	India	L, R	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Parthenium hysterophorus</i>	Vallabh Vidyanagar, Gujarat	S, L	Met	BHT	DPPH radical scavenging assay	Patel <i>et al.</i> , 2010
<i>Pluchea indica</i> Less	India	R	Met	Phenidone (2,3,4), vitamin E (1)	1. Hydroxyl free radical scavenging activity 2. Super oxide anion radical scavenging 3. Dioxygenase activity of lipoxygenase 4. Hydrogen peroxide stimulated 5-lipoxygenase activity	Sen <i>et al.</i> , 2002
<i>Saussurea lappa</i> C.B. Clarke.	Kerala	R	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subra- manian, 2014
<i>Sphaeranthus indicus</i> (Linn)	Manipal, Karnataka	UdP	95% Et	Ascorbic acid (1,2,3,4,5)	1. ABTS radical cation decolorization assay 2. DPPH radical scavenging activity 3. Scavenging of superoxide radical 4. Scavenging of nitric oxide radical 5. Iron chelating activity	Shirwaikar <i>et al.</i> , 2006
<i>Spilanthes acmella</i> L.	Balyana, Mandi, HP	L, F, S	Act, Met, Aq	Ascorbic acid	DPPH radical scavenging activity	Thakur <i>et al.</i> , 2019
<i>Spilanthes calva</i> DC	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyri- bose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan- nabasavaraj, 2007
Barringtoniaceae						
<i>Careya arborea</i> Roxb	Western Ghats, Haridravati, Shimoga, Karnataka	SB	PetEth, EtyAt, Chlo, Aq, 50% Met	Ascorbic acid(1,2,3,5), Rutin(1,2,3,4,5), BHA(3,5,6,7), α -To- copherol(6)	1. DPPH Free radical method 2. ABTS Free radical method 3. Hydrogen peroxide 4. nitric oxide 5. Superoxide 6. Lipid peroxidation inhibition method 7. Deoxyribose	Senthilkumar <i>et al.</i> , 2007

continued...

Berberidaceae													
<i>Berberis aristata</i> DC.	HGHRI, Joginder Nagar, Mandi		R	Met		BHT (1), Iron sulphate							Guleria <i>et al.</i> , 2013
Bignoniaceae													
<i>Kigellia pinnata</i>	Vallabh Vidyanagar, Gujarat		S, L	Met		BHT							Patel <i>et al.</i> , 2010
<i>Oroxylum indicum</i> (L.) Vent.	Dhameta, HP		L	EtyAt, Met, Aq		L-Ascorbic acid							Gupta <i>et al.</i> , 2008
<i>Oroxylum indicum</i> Vent.	Sonitpur, Assam		SB, RB, Se	Met		Ascorbic acid							Kumar <i>et al.</i> , 2009
Bombacaceae													
<i>Adansonia digitate</i> L.	Junagadh, Gujarat		F	Chlo, Met, Aq		Ascorbic acid (1,2)							Bhatt <i>et al.</i> , 2019
Cactaceae													
<i>Opuntia dillenii</i> Haw	Shimoga, Karnataka		F, L	Met		Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)							Badami and Chan-nabasavaraj, 2007
Caesalpinaceae													
<i>Bauhinia racemose</i> Lam.	Kolli Hills		SB	Met		α -tocopherol(1), BHT(2,5), BHA(3), Curcumin(4), Quercetin(5), Catechin(6)							Kumar <i>et al.</i> , 2005.
<i>Bauhinia variegata</i> L.	Junagadh, Gujarat		B	Chlo, Met, Aq		Ascorbic acid (1,2)							Bhatt <i>et al.</i> , 2019
<i>Caesalpinia bonducella</i> F.	Sagar, MP		Se	Et		Ascorbic acid							Shukla <i>et al.</i> , 2009
<i>Cassia auriculata</i>	Kodaikanal (South India)		-	-		BHT							Kumar <i>et al.</i> , 2008

continued...

<i>Cassia fistula</i>	India	Fl, F	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
<i>Cassia fistula</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
<i>Cassia fistula</i>	Kodaikanal (South India)	-	-	BHT	Inhibition of lipid peroxidation	Kumar <i>et al.</i> , 2008
<i>Cassia fistula</i> L.	Coimbatore, TN	B, L, Fl, Fp	Met(Bark, flowers, fruit pulp), Et (leaves)	BHA (2), Trolox (3), BHT (6)	1. Total phenolic content 2. Thiocyanate method 3. Liposomes preparation 4. Reducing power assay 5. Superoxide radical scavenging method 6. DPPH scavenging assay	Siddhuraju <i>et al.</i> , 2002
<i>Cassia fistula</i> Linn.	Ariyalur, TN	B	Aq, Met	Ascorbic acid	1. Scavenging of DPPH radicals 2. Scavenging of nitric oxide 3. Hydroxyl radical scavenging activity 4. CCl_4 induced lipid peroxidation 5. Ferrous sulphate induced lipid peroxidation scavenging	Ilavarasan <i>et al.</i> , 2005
<i>Cassia fistula</i> Linn.	DIPSAR, New Delhi	Fp, Se	Met, Hex	Ascorbic acid (1,3,4)	1. DPPH radical scavenging activity 2. FRAP assay 3. Hydroxyl radical scavenging assay 4. Reducing power assay	Irshad <i>et al.</i> , 2012
<i>Cassia occidentalis</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Cassia tora</i> L.	Junagadh, Gujarat	L	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Peltophorum pterocarpum</i> (DC.) K. Heyne	Junagadh, Gujarat	L, B	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
Capparidaceae						
<i>Capparis grandiflora</i>	Attapady area, Palakkad, Kerala	L, R	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Capparis spinosa</i> Linn.	NIPER, Punjab	R	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
<i>Capparis zeylanica</i>	Attapady area, Palakkad, Kerala	L, R	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Crataeva nurvala</i> Buch.-Ham.	Lucknow	SB	50% Et	Catechin(1,2,3,4)	1. SOD mimetic activity 2. LPO inhibitory potential 3. NO quenching capacity 4. ABTS assay	Kumari and Kakkar, 2008

continued...

Casuarinaceae												
<i>Casuarina equisetifolia</i>	India		SB, L	50% Met		Quercetin (2,3), Ascorbic acid(2,3)		1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power		Prakash <i>et al.</i> , 2007		
Celastraceae												
<i>Celastrus paniculatus</i> Willd.	HGHRL, Joginder Nagar, Mandi		Se	Met		BHT (1), Iron sulphate		1. DPPH radical scavenging activity 2. FRAP assay		Guleria <i>et al.</i> , 2013		
<i>Celastrus paniculatus</i> Willd.	Kerala		Se	Met		Gallic acid, Ascorbic acid		DPPH radical scavenging activity		Mathew and Subramanian, 2014		
<i>Crocus sativus</i> L. Kashmirianus c.v.	Pampore, JK		St	Met		BHT		1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. FTC method 4. Thiobarbituric acid assay 5. Lipid peroxidation method		Parray <i>et al.</i> , 2015		
Combretaceae												
<i>Terminalia arjuna</i>	India		F, L, B	50% Met, Met, Aq		-		B-carotene and linoleic acid		Bajpai <i>et al.</i> , 2005		
<i>Terminalia arjuna</i> Wight	NIPER, Punjab		B	Met		Vitamin C (1), Vitamin E (2)		1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay		Jadhav and Bhutani, 2002		
<i>Terminalia bellerica</i>	India		F, L, B	50% Met, Met, Aq		-		B-carotene and linoleic acid		Bajpai <i>et al.</i> , 2005		
<i>Terminalia bellerica</i> Roxb.	NIPER, Punjab		B	Met		Vitamin C (1), Vitamin E (2)		1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay		Jadhav and Bhutani, 2002		
<i>Terminalia bellerica</i> Roxb.	India		F	98% Met		BHT(1,2,3), α -tocopherol(1,2,3)		1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay		Aqil <i>et al.</i> , 2006		
<i>Terminalia chebula</i>	India		-	Aq		Ascorbic acid		1. γ -Radiolysis 2. Estimation of superoxide dismutase enzyme activity 3. Estimation of antioxidant capacity of the extracts by cyclic voltammetry and pulse radiolysis		Naik <i>et al.</i> , 2003		
<i>Terminalia chebula</i>	India		F	Aq		Ascorbic acid, gallic acid, ellagic acid		1. Estimation of SOD 2. Cyclic voltammetry 3. Xanthine-oxidase assay 4. DPPH assay		Naik <i>et al.</i> , 2004		
<i>Terminalia chebula</i>	India		F, L, B	50% Met, Met, Aq		-		B-carotene and linoleic acid		Bajpai <i>et al.</i> , 2005		

continued...

<i>Terminalia chebula</i> Retz.	India	F	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Terminalia chebula</i> Retz.	Kerala	WF	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Terminalia chebula</i> Retzius	Local market, Ahmedabad	F	Met (70%)	Ascorbic acid (2,3,4,5)	1. Reducing power assay 2. Total antioxidant capacity 3. DPPH radical scavenging activity 4. Nitric oxide radical scavenging assay 5. Hydrogen peroxide scavenging assay	Saha and Verma, 2016
<i>Terminalia muelleri</i>	India	F, L, B	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
Convolvulaceae						
<i>Convolvulus pluricaulis</i> Choisy.	Kerala	WP	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Evolvulus alsinoides</i>	Kolkata	LS	Met	-	1. DPPH radical scavenging activity 2. Superoxide radical scavenging activity 3. Metal chelating effect 4. Determination of total antioxidant capacity	Nag and De, 2008
<i>Evolvulus alsinoides</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Evolvulus alsinoides</i> Linn	India	WP	90% Et, Aq	Trolox	ABTS radical cation decolorization assay	Auddy <i>et al.</i> , 2003
<i>Evolvulus alsinoides</i> Linn.	Kerala	WP	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Evolvulus nummularius</i>	Kolkata	LS	Met	-	1. DPPH radical scavenging activity 2. Superoxide radical scavenging activity 3. Metal chelating effect 4. Determination of total antioxidant capacity	Nag and De, 2008
<i>Ipomoea aquatic</i> Forsk.	Sonitpur, Assam	YSL	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Ipomoea digitata</i>	Udupi, Karnataka	-	50% Met	-	Assay of nitric production	Jagatia and Baliga, 2004
Costaceae						
<i>Costus speciosus</i>	Bangalore, Karnataka	L, P, PS, R	50% Met, Chlo, EtyAt	Ascorbic acid(1), Gallic acid(2)	1. DPPH method 2. ABTS method 3. Hydroxyl radical scavenging activity	Vijayalakshmi and Sarada, 2008
<i>Costus speciosus</i> Koen ex. Retz	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
Crassulaceae						

continued...

<i>Bryophyllum calycinum</i> Salisb	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chanabasavaraj, 2007
Cucurbitaceae						
<i>Cucumis trigonus</i> Roxb	Shimoga, Karnataka	F	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chanabasavaraj, 2007
<i>Melothria maderaspatana</i> (Linn.) Cogn.	Chidambaram, TN	L	Aq	α -tocopherol (1,2,6), Ascorbic acid (3), BHT (4,5),	1. Hydroxyl radical scavenging activity 2. Hydrogen peroxide scavenging 3. Superoxide anion radical scavenging activity 4. DPPH radical scavenging assay 5. ABTS radical scavenging assay 6. Reducing power	Raja and Pugalendi, 2010
<i>Momordica charantia</i> Linn	India	-	Aq	Ascorbic acid	1. γ -Radiolysis 2. Estimation of superoxide dismutase enzyme activity 3. Estimation of antioxidant capacity of the extracts by cyclic voltammetry and pulse radiolysis Assay of nitric production	Naik <i>et al.</i> , 2003
<i>Momordica charantia</i>	Udupi, Karnataka	-	50% Et	-		Jagatia and Baliga, 2004
<i>Momordica charantia</i>	India	F, L, S, Se	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Momordica charantia</i>	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016

continued...

<i>Trichosanthes dioica</i>	Allahabad, UP	L	Aq	Ascorbic acid, Quercetin	Free radical absorbing power assay	Sharma <i>et al.</i> , 2009
Cyperaceae						
<i>Cyperus rotundus</i>	Thiruvaiyaru, Thanjavur, TN	Rh	70% Et	-	1. Superoxide anion scavenging activity assay 2. Hydroxyl radical scavenging activity assay 3. Nitric oxide scavenging activity assay 4. Hydrogen peroxide scavenging activity assay 5. Metal chelating activity assay 6. Reducing power assay	Nagulendran <i>et al.</i> , 2007
Dilleniaceae						
<i>Dillenia indica</i> (L.)	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
Ebenaceae						
<i>Diospyros ebenum</i> Roxb.	Rajkot, Gujarat	L	PetEth, EtyAt, Met, Aq	Ascorbic acid	DPPH radical scavenging activity	Baravalia <i>et al.</i> , 2009
Elaeagnaceae						
<i>Hippophae rhamnoides</i> L.	Labaul and Spiti, HP	Se	Chlo, EtyAt, Act, Met	-	1. Liposome model system 2. Determination of reducing power 3. Scavenging of DPPH radical	Negi <i>et al.</i> , 2005
Elatinaceae						
<i>Bergia suffruticosa</i> (Delile) Fenzl	Ahmedabad	WP	Met	Pyrogallo(1), Ascorbic acid(2), Gallic acid(3), Tannic acid(3)	1. DPPH free radical scavenging activity 2. Assay for superoxide radical scavenging activity 3. Measurement of reducing power	Anandjiwala <i>et al.</i> , 2007
Euphorbiaceae						
<i>Acalypha indica</i> L.	Shimoga, Karnataka	L, S, R	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Channabasavaraj, 2007
<i>Emblca officinalis</i>	Allahabad, UP	Se	Aq	Ascorbic acid, Quercetin	Free radical absorbing power assay	Sharma <i>et al.</i> , 2009

continued...

<i>Emblica officinalis</i> Gaertn.	India	F	Aq	Ascorbic acid(1,2)	1. Scavenging activity on the DPPH radical 2. ABTS radical cation decolorization assay	Scartezzini <i>et al.</i> , 2006
<i>Emblica officinalis</i> Gaertn.	Kerala	WF	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Jatropha curcas</i>	BGMCC, Bangalore	F	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Jatropha gossypifolia</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Jatropha multifida</i>	BGMCC, Bangalore	Fl	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Phyllanthus amarus</i>	Chennai	-	Met	BHT(1,3,6), Ascorbic acid(1,2,3,4,5,)	1. DPPH radical scavenging activity 2. Assay of superoxide radical scavenging activity 3. Scavenging of hydrogen peroxide 4. Assay of nitric oxide scavenging activity 5. Reducing power 6. Metal chelating activity	Kumaran and Karunakaran, 2007
<i>Phyllanthus debilis</i>	Chennai	-	Met	BHT(1,3,6), Ascorbic acid(1,2,3,4,5,)	1. DPPH radical scavenging activity 2. Assay of superoxide radical scavenging activity 3. Scavenging of hydrogen peroxide 4. Assay of nitric oxide scavenging activity 5. Reducing power 6. Metal chelating activity	Kumaran and Karunakaran, 2007
<i>Sauropus androgynous</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Sauropus androgynus</i> L. Merr.	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Channabasavaraj, 2007
<i>Trewia nudiflora</i>	India	L, F	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007

continued...

Fabaceae													
<i>Acacia catechu</i>	India	-	Aq	Ascorbic acid	Ascorbic acid	1. γ -Radiolysis 2. Estimation of superoxide dismutase enzyme activity 3. Estimation of antioxidant capacity of the extracts by cyclic voltammetry and pulse radiolysis	Naik <i>et al.</i> , 2003						
<i>Acacia catechu</i>	Attapady area, Palakkad, Kerala	B	Met	Ascorbic acid	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010						
<i>Acacia nilotica</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010						
<i>Acacia nilotica</i> (L.) Wild. Ex Delile	Vellore	L	Et, Aq, Bnz, Chlo, PetEth, DCM	Ascorbic acid (1,2), Catechin (3), Mannitol (4)	Ascorbic acid (1,2), Catechin (3), Mannitol (4)	1. Reducing power assay 2. DPPH Radical scavenging assay 3. Lipid peroxidation 4. Hydroxyl radical scavenging effect	Kalaivani and Mathew, 2010						
<i>Albizia amara</i>	Kodaikanal (South India)	-	-	BHT	BHT	Inhibition of lipid peroxidation	Kumar <i>et al.</i> , 2008						
<i>Albizia chinensis</i> (Osbeck)	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016						
<i>Albizia lebbek</i> (L.) Benth.	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016						
<i>Albizia lebbek</i> Benth.	Allahabad, UP	B	Met, EtyAt, DCM	Trolox	Trolox	DPPH radical scavenging activity	Ahmed <i>et al.</i> , 2014						
<i>Bauhinia variegata</i> Linn.	Local market, Allahabad	L	Aq, Bnz, Chf, PetEth, EtyAt, EtyAl, Act	BHA(1), BHT(1), Quercetin (1), Ascorbic acid (1), Propyl gallate (2)	BHA(1), BHT(1), Quercetin (1), Ascorbic acid (1), Propyl gallate (2)	1. DPPH radical scavenging assay 2. Phosphomolybdate method	Mishra, <i>et al.</i> , 2011						
<i>Clitoria ternatea</i>	Kolkata	R	Met	-	-	1. DPPH radical scavenging activity 2. Superoxide radical scavenging activity 3. Metal chelating effect 4. Determination of total antioxidant capacity	Nag and De, 2008						
<i>Clitoria ternatea</i>	Attapady area, Palakkad, Kerala	R,S,FI	Met	Ascorbic acid	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010						
<i>Dalbergia sissoo</i> Roxb.	Local area Santiniketan, WB	SB	Aq, Met	Gallic acid (1,2), EDTA (3)	Gallic acid (1,2), EDTA (3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. Ferrous ion chelating activity	Roy <i>et al.</i> , 2011						
<i>Dalbergia sissoo</i> Roxb. ex DC.	Lucknow	SB	50% Et	Catechin(1,2,3,4)	Catechin(1,2,3,4)	1. SOD mimetic activity 2. LPO inhibitory potential 3. NO quenching capacity 4. ABTS assay	Kumari and Kakkar, 2008						

continued...

<i>Delonix regia</i> Gamble.	India	FI	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Derris indica</i> (Lam.) Bennet	Junagadh, Gujarat	Se	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Desmodium gangeticum</i> L.	ARC, NBRI, Lucknow	L	Met	-	DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009
<i>Desmodium gangeticum</i> L.	Kolli Hill, Namakkal, TN	L	Et	Ascorbic acid (1,2,3), BHT (6), Mannitol (7), EDTA (8)	1. DPPH radical scavenging activity 2. Superoxide anion radical scavenging activity 3. Reducing power assay 4. Nitric oxide radical activity 5. FRAP 6. ABTS radical scavenging activity 7. Hydroxyl radical activity 8. Iron chelating activity	Venkatachalam and Muthukrishnan, 2012
<i>Desmodium gangeticum</i> (L.) DC.	Chitrakoot, MP	AP	50% Alc	Ascorbic acid (1,2,3), Tocopherol(4), Lipoic acid(6)	1. DPPH radical scavenging assay 2. Total antioxidant capacity 3. Nitric oxide scavenging 4. Assay of lipid peroxidation 5. Ferryl-bipyridyl assay 6. Hypochlorous acid scavenging	Govindarajan <i>et al.</i> , 2003
<i>Dichrostachys cinerea</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Erythrina stricta</i> Roxb.	Nagaland	SB	n-Hex, DCM, EtyAt Met, Aq,	Ascorbic acid (1), Trolox (2)	1. DPPH radical scavenging activity 2. FRAP assay	Akter <i>et al.</i> , 2016
<i>Glycyrrhiza glabra</i>	India	-	Aq	Ascorbic acid	1. γ -Radiolysis 2. Estimation of superoxide dismutase enzyme activity 3. Estimation of antioxidant capacity of the extracts by cyclic voltammetry and pulse radiolysis	Naik <i>et al.</i> , 2003
<i>Glycyrrhiza glabra</i> Linn.	Kerala	R	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Indigofera cassioides</i> Rottl. Ex. DC.	Yercaud Hill, India	L	Met	Ascorbic acid (1-7), Rutin (1-7)	1. ABTS radical scavenging activity 2. DPPH radical scavenging activity 3. Nitric oxide radical inhibition assay 4. Superoxide radical scavenging activity 5. Hydrogen peroxide radical scavenging method 6. Hydrogen radical scavenging activity 7. Total iron reducing power assay	Kumar <i>et al.</i> , 2012

continued...

<i>Indigofera tinctoria</i>	India	F	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
<i>Mucuna pruriens</i>	Kolkata	Se	Met	BHT(1), L-Ascorbic acid(1,2,5), Quercetin(4,5,6), Tocopherol(4,5,6)	1. DPPH radical scavenging activity 2. Determination of reducing power 3. Determination of hydroxyl radical scavenging activity 4. Determination of nitric oxide radical scavenging activity 5. Determination of superoxide anion radical scavenging activity 6. Determination of H_2O_2 radical scavenging activity	Rajeshwar <i>et al.</i> , 2005
<i>Mucuna pruriens</i> Linn.	India	S	Alc	-	1. $FeSO_4$ induced lipid peroxidation 2. Superoxide anion scavenging 3. Hydroxyl radical scavenging	Tripathi and Upadhyay, 2001
<i>Pterocarpus marsupium</i>	India	HW, L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Sesbania grandiflora</i> (L.) Pers	Andhra university Campus, Visakhapatnam	L	Aq	Ascorbic acid (1,2,3,5), Vitamin E (6), BHT (1,2,3), EDTA (4)	1. DPPH radical scavenging assay 2. Hydroxyl radical scavenging activity 3. Lipid peroxidation assay 4. Metal chelating activity 5. Total antioxidant activity 6. Reducing power assay	Padmaja <i>et al.</i> , 2011
<i>Trigonella foenum-graecum</i> Linn.	Kerala	Se	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Trigonella foenum-graecum</i>	Local market, Gujarat	L	Met	Ascorbic acid (1), BHT (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Soni and Sosa, 2013
<i>Trigonella foenum-graecum</i> L.	India	L	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Trigonella foenum-graecum</i> Linn.	Joginder Nagar, Mandi, HP	L, Se	Met, Act	Ascorbic acid	DPPH radical scavenging activity	Sagar <i>et al.</i> , 2018
Gentianaceae						
<i>Canscora decussata</i>	Kolkata	LS	Met	-	1. DPPH radical scavenging activity 2. Superoxide radical scavenging activity 3. Metal chelating effect 4. Determination of total antioxidant capacity	Nag and De, 2008

continued...

<i>Canscora decussate</i> (Roxb.) Roem. & Schult.	Kerala	Se	Met	Trolox (2), Ascorbic acid (4)	1. DPPH radical scavenging activity 2. ABTS assay 3. FRAP assay 4. Phosphomolybdenum method	Kousalya and Bai, 2016
<i>Canscora diffusa</i>	Kolkata	LS	Met	-	1. DPPH radical scavenging activity 2. Superoxide radical scavenging activity 3. Metal chelating effect 4. Determination of total antioxidant capacity	Nag and De, 2008
<i>Gentianella moorcroftiana</i> Wall. ex G. Don	Beeling, Lahaul-Spiti, HP	F, S	Met, Act	Ascorbic acid	DPPH radical scavenging activity	Sagar <i>et al.</i> , 2018
Geraniaceae						
<i>Geranium nepalense</i> Sweet.	Summer Hill, Shimla, HP	L, R	Act, Met	Ascorbic acid	DPPH radical scavenging assay	Chauhan <i>et al.</i> , 2020
Ginkgoaceae						
<i>Ginkgo biloba</i>	Udupi, Karnataka		95% Et	-	Assay of nitric production	Jagetia and Baliga, 2004
<i>Ginkgo biloba</i> Linn.	NIPER, Punjab	WP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
Hypericaceae						
<i>Hypericum patulum</i>	NIPER, Punjab	WP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
<i>Hypericum perforatum</i> Thunb.	NIPER, Punjab	WP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
Lamiaceae						
<i>Anisomeles malabarica</i>	Attapady area, Palakkad, Kerala	L	Met	Ascorbic acid	DPPH radical scavenging assay	Simi <i>et al.</i> , 2010
<i>Clerodendrum colebrookianum</i> Walp.	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Coleus ambonicus</i>	Udupi, Karnataka	-	MCh:Met	-	Assay of nitric production	Jagetia and Baliga, 2004

continued...

<i>Coleus aromaticus</i> Benth	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan-nabasavaraj, 2007
<i>Coleus aromaticus</i> Benth.	Chennai	L	Aq	BHT(1,5), Gallic acid(2), Ascorbic acid(3), Curcumin(4), EDTA(6)	1. β -carotene-linoleate model system 2. DPPH radical scavenging activity 3. Superoxide radical scavenging activity 4. Nitric oxide scavenging activity 5. Reducing power assay 6. Metal chelating activity	Kumaran and Karunakaran, 2006
<i>Hyptis suaveolens</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Hyssopus officinalis</i> Linn.	Marathwada, Maharashtra	AP	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
<i>Lavandula bipinnata</i> (L.) O. Ktze.	Nanded, Maharashtra		Aq, Et, Hex	Ascorbic acid (1-3)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Superoxide radical scavenging activity	Shaikh <i>et al.</i> , 2014
<i>Mentha spicata</i>	Local market, Gujarat	L	Met	Ascorbic acid (1), BHT (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Soni and Sosa, 2013
<i>Ocimum basilicum</i> L.	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Ocimum basilicum</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Ocimum canum</i> Sims.	Coimbatore, TN	L	Aq	Ascorbic acid (1-4), BHT (1-4)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Metal chelating activity 4. Prevention of deoxyribose degradation	Selvi <i>et al.</i> , 2015
<i>Ocimum kilimandscharicum</i> Guerke.	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Ocimum killimandscharicum</i> G	NIPER, Punjab	AP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
<i>Ocimum sanctum</i>	Udupi, Karnataka	L	50% Et	-	Assay of nitric production	Jagatia and Baliga, 2004

continued...

<i>Ocimum sanctum</i>	Local market, Gujarat	L	Met	Ascorbic acid (1), BHT (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Soni and Sosa, 2013
<i>Ocimum sanctum</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
<i>Ocimum sanctum</i> L.	India	L	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Ocimum sanctum</i> L.	ARC, NBRI, Lucknow	L	Met	-	DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009
<i>Ocimum sanctum</i> L. (Black strain)	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Ocimum sanctum</i> L. (White strain)	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Origanum vulgare</i> Linn.	Marathwada, Maharashtra	AP	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
<i>Orthosiphon thymiflorus</i>	Attapady area, Palakkad, Kerala	WP	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
<i>Tectona grandis</i>	Udupi, Karnataka	-	Aq	-	Assay of nitric production	Jagteia and Baliga, 2004
Lauraceae						
<i>Cassytha filiformis</i> L.	Sonitpur, Assam	WP	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Cinnamomum camphora</i> (L.) T. Nees & C. H. Eberm.	HGHRI, Joginder Nagar, Mandi	L	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Cinnamomum tamala</i>	India	L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Cinnamomum zeylanicum</i>	India	SB	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
Leaceae						
<i>Leea indica</i> (Burm.f.) Merr	Dandeli, WG	L	Chlo, EtyAt, Met, Et, Aq	Ascorbic acid (1,2,3)	1. FRAP assay 2. Phosphomolybdenum assay 3. DPPH radical scavenging activity	Ghagane <i>et al.</i> , 2017
Loranthaceae						
<i>Dendrophthoe falcata</i> Eiting.	NIPER, Punjab	L, R	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
Lythraceae						

continued...

<i>Lawsonia inermis</i>	India	L, F	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
<i>Lawsonia inermis</i> L.	India	L	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Punica granatum</i> cv. Ganesha	Bangalore	Pe, Se	Met, Ethyl acetate, Aq	BHA	1. β -carotene-linoleate antioxidant assay 2. DPPH free radical scavenging activity	Singh <i>et al.</i> , 2002
<i>Punica granatum</i> cv. Ganesha	India	Pe	Ethyl acetate, Aceton, Met, Aq	Ascorbic acid	Phosphomolybdenum method	Negi <i>et al.</i> , 2003
Malvaceae						
<i>Abroma augusta</i> (Linn.)	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Bombax ceiba</i> (Linn.)	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Hibiscus cannabinus</i>	Vallabh Vidyanagar, Gujarat	F, S, L	Met	BHT	DPPH radical scavenging assay	Patel <i>et al.</i> , 2010
<i>Hibiscus sabdariffa</i> Linn.	Sonitpur, Assam	F, L, Fl	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Hibiscus sabdariffa</i> (Linn.)	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Malva sylvestris</i> Linn.	Marathwada, Maharashtra	WP	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
<i>Pavonia procumbens</i> Boiss	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Channabasavaraj, 2007

continued...

<i>Sida acuta</i> Burm.	Sonitpur, Assam	R, WP	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Sida cordifolia</i> Linn.	India	WP	90% Et, Aq	Trolox	ABTS radical cation decolorization assay	Auddy <i>et al.</i> , 2003
Meliaceae						
<i>Azadirachta indica</i>	India	SB	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
<i>Cedrela toona</i> Roxb.	Lucknow	SB	50% Et	Catechin(1,2,3,4)	1. SOD mimetic activity 2. LPO inhibitory potential 3. NO quenching capacity 4. ABTS assay	Kumari and Kakkar, 2008
<i>Cedrus deodera</i> (Roxb.) G. Don	Kerala	SB	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Soyimida fembrifuga</i> (Roxb.) A. Juss.	Nanded, Maharashtra	-	Aq, Et, Hex	Ascorbic acid (1-3)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Superoxide radical scavenging activity	Shaikh <i>et al.</i> , 2014
Menispermaceae						
<i>Tinospora cordifolia</i>	Udupi, Karnataka	S	Aq, MCh:Met, Met, Hex	-	Assay of nitric production	Jagetia and Baliga, 2004
<i>Tinospora cordifolia</i>	Botanical garden of the University of Allahabad	S	Aq, Bnz, Chf, PetEth, EtyAt, EtyAl, Act	BHA(1), BHT(1), Quercetin (1), Ascorbic acid (1), Propyl gallate (2)	1. DPPH radical scavenging assay 2. Phosphomolybdate method	Mishra, <i>et al.</i> , 2011
<i>Tinospora cordifolia</i> (Thumb.) Miers	Kerala	S	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Tinospora cordifolia</i> (Willd.) Hook. f. & Thomson	HGHRI, Joginder Nagar, Mandi	S	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Tinospora cordifolia</i> (Willd.) Miers.	Nanded, Maharashtra		Aq, Et, Hex	Ascorbic acid (1-3)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Superoxide radical scavenging activity	Shaikh <i>et al.</i> , 2014
Moraceae						
<i>Ficus bengalensis</i>	Allahabad, UP	AR	Aq	Ascorbic acid, Quercetin	Free radical absorbing power assay	Sharma <i>et al.</i> , 2009

continued...

<i>Morus alba</i> L.	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan-nabasavaraj, 2007
<i>Strebilis aspera</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
Moringaceae						
<i>Moringa oleifera</i>	India	L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Moringa oleifera</i>	Allahabad, UP	F	Aq	Ascorbic acid, Quercetin	Free radical absorbing power assay	Sharma <i>et al.</i> , 2009
<i>Moringa oleifera</i>	Loni and adjoining areas, Maharashtra	L	Et (80%)	BHT (1,2), Vitamin C (1,2)	1. DPPH radical scavenging activity 2. Reducing power assay	Padmanabhan and Jangle, 2012
<i>Moringa oleifera</i> Forsk.	Sonitpur, Assam	R,F,L,B	Met	Ascorbic acid	DPPH radical scavenging activity	Kumar <i>et al.</i> , 2009
<i>Moringa oleifera</i> Lam.	India	L	Aq, 80% Met, 70% Et	Ascorbic acid(1,2,4), α -tocopherol(5), BHA(1,4), BHT(4), rutin (1), quercetin(6), kaempferol(6)	1. β -carotene-linoleic acid system 2. Reducing power 3. Superoxide radical scavenging 4. Linoleic acid 5. Liposomes preparation 6. DPPH radical scavenging method	Siddhuruju and Becker, 2003
Myrtaceae						
<i>Eucalyptus globulus</i>	India	L, B	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Eugenia jambolana</i>	Udupi, Karnataka	L(1), Se(2)	1. MCh:Met, 2. 50% Et	-	Assay of nitric production	Jagetia and Baliga, 2004
<i>Syzygium cumini</i>	India	Se	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Syzygium cumini</i>	Bangalore	LG	Met, Aq	Ascorbic acid (1-4)	1. DPPH radical scavenging activity 2. FRAP assay 3. Hydroxyl radical scavenging activity 4. Nitric oxide radical scavenging	Eshwarappa <i>et al.</i> , 2014

continued...

<i>Syzygium cumini</i>	Local market, Amritsar	Fp	Et	Gallic acid(1-3), Caffeic acid(1-3), Sinapic acid(1-3), Quercetin(1-3), Delphinidin chloride (1-3)	1. DPPH radical scavenging activity 2. ABTS radical scavenging assay 3. FRAP assay	Singh <i>et al.</i> , 2016
<i>Syzygium cumini</i> (L.)	Kolkata	Fs	Aq	Ascorbic acid(5), gallic acid(5)	1. Hydroxyl radical scavenging assay 2. Superoxide radical scavenging assay 3. DPPH radical scavenging activity 4. lipid peroxidation 5. Determination of total antioxidant capacity	Banerjee <i>et al.</i> , 2005
<i>Syzygium cumini</i> (L.) Skeels	HGHRI, Joginder Nagar, Mandi	B	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Syzygium cumini</i> (L.) Skeels	Junagadh, Gujarat	L	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
Nelumbonaceae						
<i>Nelumbo nucifera</i> Gaertn.	Kerala	Fl	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
Nyctaginaceae						
<i>Boerhaavia diffusa</i>	Udupi, Karnataka	-	50% Et	-	Assay of nitric production	Jagetia and Baliga, 2004
<i>Boerhaavia diffusa</i>	India	R	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Boerhaavia diffusa</i> L.	HGHRI, Joginder Nagar, Mandi	WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
Nymphaeaceae						
<i>Nelumbo nucifera</i> Gaertn.	India	S	50% hydro alcoholic	Rutin(1,2), Vitamin E(3,4,5)	1. DPPH method 2. Nitric oxide radical inhibition assay 3 Estimation of catalase activity 4. Estimation of superoxide dismutase 5. Measurement of lipid peroxidation	Rai <i>et al.</i> , 2006
Orchidaceae						
<i>Dendrobium thyrsiflorum</i>	Cherrapunjee, Meghalaya	S, L, R	Met, Act, Chlo	-	1. DPPH radical scavenging activity 2. FRAP assay	Bhattacharyya <i>et al.</i> , 2015
<i>Habenaria edgeworthii</i> Hook. f. ex. Collett	Surkunda, Tehri Garhwal, Uttarakhand	Se, Tu	Met (80%)	Ascorbic acid (1,2,3)	1. ABTS radical scavenging activity 2. DPPH radical scavenging activity 3. FRAP assay	Giri <i>et al.</i> , 2012
Oxalidaceae						

continued...

<i>Avrroha carambola</i>	India		L	50% Met	Quercetin (2,3), Ascorbic acid(2,3)	1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Prakash <i>et al.</i> , 2007
Papaveraceae							
<i>Fumaria parviflora</i> Lam.	HGHRL, Joginder Nagar, Mandi		WP	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
Papilionaceae							
<i>Cicer arietinum</i> L.	Shimoga, Karnataka		L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan-nabasavaraj, 2007
<i>Clitoria ternate</i>	BGMCC, Bangalore		L, Fl	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Sophora japonica</i> Linn.	NIPER, Punjab		S	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
Passifloraceae							
<i>Passiflora edulis</i>	BGMCC, Bangalore		F	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
Phyllanthaceae							
<i>Phyllanthus emblica</i>	India		L, F	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Phyllanthus maderaspatensis</i>	Chennai			Met	BHT(1,3,6), Ascorbic acid(1,2,3,4,5)	1. DPPH radical scavenging activity 2. Assay of superoxide radical scavenging activity 3. Scavenging of hydrogen peroxide 4. Assay of nitric oxide scavenging activity 5. Reducing power 6. Metal chelating activity	Kumaran and Karunakaran, 2007
<i>Phyllanthus niruri</i>	Udupi, Karnataka		Sh	50% Et	-	Assay of nitric production	Jagatia and Baliga, 2004

continued...

<i>Phyllanthus niruri</i>	Mysore, Karnataka	L, F	Aq, Met	-	1. Microsomal membrane lipid peroxidation 2. DPPH radical scavenging 3. Superoxide anion scavenging activity	Harish and Shivanandappa <i>et al.</i> , 2006
<i>Phyllanthus urinaria</i>	Chennai	-	Met	BHT(1,3,6), Ascorbic acid(1,2,3,4,5)	1. DPPH radical scavenging activity 2. Assay of superoxide radical scavenging activity 3. Scavenging of hydrogen peroxide 4. Assay of nitric oxide scavenging activity 5. Reducing power 6. Metal chelating activity	Kumaran and Karunakaran, 2007
<i>Phyllanthus virgatus</i>	Chennai	-	Met	BHT(1,3,6), Ascorbic acid(1,2,3,4,5)	1. DPPH radical scavenging activity 2. Assay of superoxide radical scavenging activity 3. Scavenging of hydrogen peroxide 4. Assay of nitric oxide scavenging activity 5. Reducing power 6. Metal chelating activity	Kumaran and Karunakaran, 2007
Piperaceae						
<i>Piper betel</i>	Jalandhar, Punjab	L	Aq:Et (80%)	Ascorbic acid (2)	1. Beta carotene bleaching method 2. DPPH radical scavenging activity	Kaur and Mondal, 2014
<i>Piper cubeba</i>	Koraput, Mayurbhanj, Odisha	F	Aq, Met, Et		DPPH radical scavenging assay	Nahak and Sahu, 2011
<i>Piper cubeba</i> L.	India	Se	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Piper longum</i>	India	F, L	50% Met, Met, Aq	-	B-carotene and linoleic acid	Bajpai <i>et al.</i> , 2005
<i>Piper longum</i>	Botanical garden of the University of Allahabad	F	Aq, Bnz, Chf, PetEth, EtyAt, EtyAl, Act	BHA(1), BHT(1), Quercetin (1), Ascorbic acid (1), Propyl gallate (2)	1. DPPH radical scavenging assay 2. Phosphomolybdate method	Mishra, <i>et al.</i> , 2011
<i>Piper longum</i> L.	ARC, NBRI, Lucknow	F	Met	-	DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009
<i>Piper longum</i> L.	HGHRI, Joginder Nagar, Mandi	R	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Piper nigrum</i>	Koraput, Mayurbhanj, Odisha	F	Aq, Met, Et	-	DPPH radical scavenging assay	Nahak and Sahu, 2011
Plumbaginaceae						
<i>Plumbago zeylanica</i>	TN	R	Aq, Et	L-ascorbic acid, Trolox	1. DPPH radical scavenging assay 2. ABTS radical scavenging assay 3. FRAP assay	Tilak <i>et al.</i> , 2004

continued...

<i>Plumbago zeylanica</i>	Attapady area, Palakkad, Kerala	R, B, S	Met	Ascorbic acid	DPPH radical scavenging assay	Sini <i>et al.</i> , 2010
Poaceae						
<i>Cymbopogon citratus</i>	Madurai, TN	L	Chlo, Met, Aq	-	DPPH radical scavenging activity	Balakrishnan <i>et al.</i> , 2014
<i>Cymbopogon citratus</i>	Botanical Garden of BHU, Varanasi	L	Aq	Ascorbic acid (1,2,3,4,5)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity assay 3. Superoxide radical scavenging activity assay 4. Hydrogen peroxide scavenging activity assay 5. Reducing power	Keshari <i>et al.</i> , 2018
<i>Cynodon dactylon</i>	Udupi, Karnataka	-	50% Met	-	Assay of nitric production	Jagetia and Baliga, 2004
<i>Cynodon dactylon</i> Linn	India	WP	90% Et, Aq	Trolox	ABTS radical cation decolorization assay	Auddy <i>et al.</i> , 2003
<i>Imperata cylindrical</i>	Ernakulam	R	Chlo, DCM, Met, Act, Aq	Ascorbic acid (1,2,3)	1. Nitric oxide scavenging method 2. Reducing power assay 3. Hydrogen peroxide scavenging assay	Padma <i>et al.</i> , 2013
<i>Verivera zizanooides</i> L. Nash.	Shimoga, Karnataka	Rh	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan-nabasavaraj, 2007
Portulacaceae						
<i>Portulaca oleracea</i> Linn.	Marathwada, Maharashtra	WP	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-limolect acid assay	Nile <i>et al.</i> , 2017
Punicaceae						
<i>Punica granatum</i> L.	India	Ri	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
<i>Punica granatum</i> L.	Junagadh, Gujarat	Ec	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Punica granatum</i> Linn.	Kerala	WF	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subra-manian, 2014

continued...

Rubiaceae												
<i>Hedyotis corymbosa</i> (L) Lam.	Coimbatore, TN		AP	Met	BHT							Sasikumar <i>et al.</i> , 2010
<i>Meyna spinosa</i> Roxb. ex Link	Khowai, Tripura	L		Met, EtyAt, PetEth	BHA (2), Quercetin (3), Ascorbic acid (1,4,6), Gallic acid (5), α -tocopherol (8)							Sen <i>et al.</i> , 2013
<i>Morinda citrifolia</i>	Udupi, Karnataka	B		50% Et	-							Jagatia and Baliga, 2004
<i>Paederia foetida</i> L.	Sonitpur, Assam	L, T		Met	Ascorbic acid							Kumar <i>et al.</i> , 2009
<i>Rubia cordifolia</i> Linn.	Marathwada, Maharashtra	R		Et	Trolox (1-3)							Nile <i>et al.</i> , 2017
<i>Spermacoce latifolia</i>	Attapady area, Palakkad, Kerala	L		Met	Ascorbic acid							Sini <i>et al.</i> , 2010
Rutaceae												
<i>Aegle marmelos</i>	Udupi, Karnataka		L(1), F(2)	1. Aq 2. 50% Et	-							Jagatia and Baliga, 2004
<i>Aegle marmelos</i> (L.) Correa ex Roxb.	HGHRI, Joginder Nagar, Mandi	L		Met	BHT (1), Iron sulphate							Guleria <i>et al.</i> , 2013
<i>Aegle marmelos</i> Corr.	Lucknow	SB		50% Et	Catechin(1,2,3,4)							Kumari and Kakkar, 2008
<i>Citrus aurantifolia</i>	Jalandhar, Punjab	L		Aq:Et (80%)	Ascorbic acid (2)							Kaur and Mondal, 2014
Santalaceae												
<i>Santalum album</i>	Udupi, Karnataka	-		50% Et	-							Jagatia and Baliga, 2004
Sapindaceae												
<i>Dodonaea viscosa</i>	Attapady area, Palakkad, Kerala	WP		Met	Ascorbic acid							Sini <i>et al.</i> , 2010

continued...

Saururaceae													
<i>Houttuynia cordata</i> Thunb.	Sonitpur, Assam	L		Met		Ascorbic acid		DPPH radical scavenging activity				Kumar <i>et al.</i> , 2009	
Scrophulariaceae													
<i>Bacopa monniera</i> (Linn.) Pennell	Kerala	WP		Met		Gallic acid, Ascorbic acid		DPPH radical scavenging activity				Mathew and Subramanian, 2014	
<i>Bacopa monniera</i> Linn	Loni and adjoining areas, Maharashtra	L		Et (80%)		BHT (1,2), Vitamin C (1,2)		1. DPPH radical scavenging activity 2. Reducing power assay				Padmanabhan and Jangle, 2012	
<i>Bacopa monnieri</i> (L.) Pennell	HGHRI, Joginder Nagar, Mandi	WP		Met		BHT (1), Iron sulphate		1. DPPH radical scavenging activity 2. FRAP assay				Guleria <i>et al.</i> , 2013	
<i>Bacopa monnieri</i> Linn.	NIPER, Punjab	WP		Met		Vitamin C (1), Vitamin E (2)		1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay				Jadhav and Bhutani, 2002	
<i>Picrorhiza kurroa</i> Royle ex benth.	HGHRI, Joginder Nagar, Mandi	RS		Met		BHT (1), Iron sulphate		1. DPPH radical scavenging activity 2. FRAP assay				Guleria <i>et al.</i> , 2013	
<i>Picrorhiza kurroa</i>	Udupi, Karnataka	-		95% Et		-		Assay of nitric production				Jagetia and Baliga, 2004	
<i>Verbascum thapsus</i>	BGMCC, Bangalore	L		Aq, Et		-		DPPH radical scavenging assay				Narayanawamy and Balakrishnan, 2011	
Simaroubaceae													
<i>Simarouba glauca</i>	Thrissur, Kerala			PetEth, EtyAt		Ascorbic acid (1-3)		1. Total antioxidant capacity assay 2. Hydroxyl radical scavenging activity 3. DPPH radical scavenging activity				Santhosh <i>et al.</i> , 2016	
Smilacaceae													
<i>Smilax china</i> Linn.	India	Rh		Et		-		1. Effect on FeSO ₄ induced lipid peroxidation 2. Effect on aerial oxidation of the reduced glutathione 3. Effect on superoxide and hydroxyl radicals				Tripathi <i>et al.</i> , 2001	
<i>Smilax zeylanica</i> L.	Haniya, Hosanagarataluk, Shivamogga, Karnataka	L, F		Met		Ascorbic acid		1. DPPH radical scavenging activity 2. Ferric reducing assay				Dhanya Shree <i>et al.</i> , 2018	
Solanaceae													
<i>Cestrum nocturnum</i>	Botanical Garden of BHU, Varanasi	L		Aq		Ascorbic acid (1,2,3,4,5)		1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity assay 3. Superoxide radical scavenging activity assay 4. Hydrogen peroxide scavenging activity assay 5. Reducing power				Keshari <i>et al.</i> , 2018	
<i>Datura metel</i>	Attapady area, Palakkad, Kerala	L		Met		Ascorbic acid		DPPH radical scavenging assay				Simi <i>et al.</i> , 2010	
<i>Datura stramonium</i>	Kodaikanal (South India)	-		-		BHT		Inhibition of lipid peroxidation				Kumar <i>et al.</i> , 2008	

continued...

<i>Solanum indicum</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Solanum indicum</i> Linn.	Kaloha, Kangra, HP	L	Met, Act, Aq	Ascorbic acid	1. DPPH radical scavenging activity 2. Reducing power assay	Rana <i>et al.</i> , 2017
<i>Solanum nigrum</i> L.	ARC, NBRI, Lucknow	F	Met		DPPH radical scavenging activity	Veeru <i>et al.</i> , 2009
<i>Solanum xanthocarpum</i> Schrad. & H. Wendl.	Junagadh, Gujarat	Ap	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Withania coagulans</i>	Botanical Garden of BHU, Varanasi	F	Aq	Ascorbic acid (1,2,3,4,5)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity assay 3. Superoxide radical scavenging activity assay 4. Hydrogen peroxide scavenging activity assay 5. Reducing power	Keshari <i>et al.</i> , 2018
<i>Withania somnifera</i> (L.) Dunal	Local vendor of Kolkata, WB	R	Met:Aq (7:3)	Ascorbic acid (1,8,9), Mannitol (2), Quercetin (3), Curcumin (4), Gallic acid (5), Sodium pyruvate (6), Lipoic acid (7)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Superoxide radical scavenging activity 4. Nitric oxide radical scavenging activity 5. Peroxynitrite anion scavenging 6. Hydrogen peroxide scavenging assay 7. Singlet oxygen scavenging 8. Hypochlorous acid scavenging 9. Reducing power	Chaudhuri <i>et al.</i> , 2012
<i>Withania somnifera</i> (L.) Dunal	HGHRI, Joginder Nagar, Mandi	R	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Withania somnifera</i> (Linn.) Dunal.	Kerala	R	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
Sterculiaceae						
<i>Helicteres isora</i> L.	Nanded, Maharashtra		Aq, Et, Hex	Ascorbic acid (1-3)	1. DPPH radical scavenging activity 2. Hydroxyl radical scavenging activity 3. Superoxide radical scavenging activity	Shaikh <i>et al.</i> , 2014
Symplocaceae						
<i>Symplocos racemosa</i> Roxb.	Marathwada, Maharashtra	S	Et	Trolox (1-3)	1. DPPH radical scavenging activity 2. Reducing power assay 3. β -Carotene-linoleic acid assay	Nile <i>et al.</i> , 2017
Taxaceae						
<i>Taxus baccata</i> L.	HGHRI, Joginder Nagar, Mandi	L	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
Theaceae						

continued...

<i>Camellia sinensis</i> L.	India	L	98% Met	BHT(1,2,3), α -tocopherol(1,2,3)	1. FTC Method 2. TBA method 3. DPPH free radical scavenging assay	Aqil <i>et al.</i> , 2006
Trichopodaceae						
<i>Trichopus zeylanicus</i> Gaertn.	NIPER, Punjab	AP	Met	Vitamin C (1), Vitamin E (2)	1. Free radical scavenging activity (DPPH) 2. Lipid peroxidation assay	Jadhav and Bhutani, 2002
Valerianaceae						
<i>Nardostachys jatamansi</i> DC.	Kerala	Rh	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
<i>Valeriana wallichii</i> DC.	Kerala	R	Met	Gallic acid, Ascorbic acid	DPPH radical scavenging activity	Mathew and Subramanian, 2014
Verbenaceae						
<i>Callicarpa arborea</i> Roxb.	Dampa TRF, Mizoram	L	Met	Ascorbic acid (1,2,3)	1. ABTS radical cation decoloration assay 2. DPPH radical scavenging activity 3. Reducing power assay	Singh <i>et al.</i> , 2016
<i>Gmelina arborea</i>	Vallabh Vidyanagar, Gujarat	S, L	Met	BHT	DPPH radical scavenging assay	Patel <i>et al.</i> , 2010
<i>Gmelina arborea</i>	VNSGU	L	Met	Ascorbic acid (1), BHT (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Soni and Sosa, 2013
<i>Gmelina arborea</i> Roxb.	Western Ghats, Maharashtra	SB	Met	Ascorbic acid	1. DPPH radical scavenging activity 2. Reducing power assay 3. Hydrogen peroxide scavenging assay 4. Nitric oxide radical scavenging activity 5. Hydroxyl radical scavenging activity	Patil <i>et al.</i> , 2009
<i>Vitex negundo</i>	Udupi, Karnataka	L	95% Et, MCh:Met, Aq	-	Assay of nitric production	Jagatia and Baliga, 2004
<i>Vitex negundo</i> Linn.	Devthana-Nandri, Sirmaur HP	L	Met, Act, Aq	Ascorbic acid	1. DPPH radical scavenging activity 2. Reducing power assay	Prakash <i>et al.</i> , 2017
Vitaceae						

continued...

<i>Cissus quadrangularis</i> (L.)	TN	AP	Et, Met	Quercetin (1-6)	1. DPPH radical scavenging 2. Hydroxyl radical scavenging activity assay 3. ABTS radical scavenging property 4. Nitric oxide radical scavenging activity 5. Superoxide radical scavenging activity assay 6. Reducing power assay	Dhanasekaran, 2020
<i>Cissus quadrangularis</i> L.	Mysore	S	Ethyl acetate, Met, Aq, n-Hex	BHA(1,2)	1. DPPH radical scavenging assay 2. β -carotene linoleic acid model	Murthy <i>et al.</i> , 2003
<i>Cissus quadrangularis</i> L.	Shimoga, Karnataka	L	Met	Ascorbic acid(1,2,4,5), Rutin(1,2,4,5,7), BHA(4,6)	1. Scavenging of ABTS radical cation 2. DPPH radical scavenging method 3. Scavenging of hydroxyl radical by deoxyribose method 4. Scavenging of hydroxyl radical by p-NDA method 5. Scavenging of hydrogen peroxide 6. Lipid peroxidation inhibitory activity 7. Nitric oxide radical inhibition assay 8. Scavenging of superoxide radical by alkaline DMSO method	Badami and Chan-nabasavaraj, 2007
Zingiberaceae						
<i>Alpina calcarata</i>	BGMCC, Bangalore	L	Aq, Et	-	DPPH radical scavenging assay	Narayanaswamy and Balakrishnan, 2011
<i>Alpinia galanga</i> (L.) Willd.	NBU and Calicut university India	Rh L	Et 50% Met	Quercetin Quercetin (2,3), Ascorbic acid(2,3)	DNA protection assay 1. Auto-oxidation of β -carotene and linoleic acid assay 2. DPPH free radical scavenging activity 3. Reducing power	Nag <i>et al.</i> , 2019 Prakash <i>et al.</i> , 2007
<i>Alpinia zerumbet</i> (Pers.) B.L. Burtt	NBU and Calicut university	Rh	Et	Quercetin	DNA protection assay	Nag <i>et al.</i> , 2019
<i>Curcuma amada</i> Roxb.	Junagadh, Gujarat	Rh	Chlo, Met, Aq	Ascorbic acid (1,2)	1. DPPH radical scavenging activity 2. Nitric oxide scavenging activity	Bhatt <i>et al.</i> , 2019
<i>Curcuma caesia</i> Roxb.	Nambol, Bishnupur, Manipur	Rh	PetEth, EtyAt, Et, Met, Aq	Ascorbic acid (2)	1. DPPH radical scavenging activity 2. Reducing power assay	Devi <i>et al.</i> , 2015
<i>Curcuma caesia</i> Roxb.	NBU and Calicut university	Rh	Et	Quercetin	DNA protection assay	Nag <i>et al.</i> , 2019
<i>Curcuma longa</i> L.	HGHRI, Joginder Nagar, Mandi	Rh	Met	BHT (1), Iron sulphate	1. DPPH radical scavenging activity 2. FRAP assay	Guleria <i>et al.</i> , 2013
<i>Zingiber officinale</i>	Loni and adjoining areas, Maharashtra	Rh	Et (80%)	BHT (1,2), Vitamin C (1,2)	1. DPPH radical scavenging activity 2. Reducing power assay	Padmanabhan and Jangle, 2012
<i>Zingiber officinale</i> Rosc.	NBU and Calicut university	Rh	Et	Quercetin	DNA protection assay	Nag <i>et al.</i> , 2019
<i>Zingiber zerumbet</i> (L.) Smith	NBU and Calicut university	Rh	Et	Quercetin	DNA protection assay	Nag <i>et al.</i> , 2019

Places:

AP=Andhra Pradesh, TN=Tamil Nadu, HP=Himachal Pradesh, MP=Madhya Pradesh, UP=Uttar Pradesh, WB=West Bengal, JK=Jammu and Kashmir, WG=Western Ghats, NIPER=National Institute of Pharmaceutical Education and research, ARC=Auraon Research Center, NBRI=National Botanical Research Institute, SFA= Seshachalam Forest Area, PMF=Pichavaram Mangrove Forest, BNIC=Bhupal Nobles Institute Campus, HGHRI=Herbal Garden and Herbarium Research Institute, AUC= Andhra University Campus, BGMCC=Botanical Gardens of Mount Carmel College, Bangalore, CIAH=Central Institute for Arid Horticulture, DIPSAR=Delhi Institute of Pharmaceutical Science and Research , VNSGU=Veer Narmad South Gujarat University, TRF=Tiger reserve forest, AHG=Amity Herbal Garden, BHU=Banaras Hindu University, NBU=North Bengal University

Methods:

DPPH=1,1-diphenyl-2-picryl hydrazyl, ABTS=2,2'-azino bis (3-ethylbenzothiazoline-6-sulphonic acid), BHA=Butylated hydroxyanisole, BHT=Butylated hydroxytoluene, LPO=Lipid peroxidation, LDL=Low density lipoprotein, MDA= Malondialdehyde, NBT=Nitroblue Tetrazolium, GSH=Glutathione, SOD=Superoxide dismutase, FRAP=Ferric reducing antioxidant power, FTC=Ferric thiocyanate, TBA=Thiobarbituric acid, TBARS=Thiobarbituric acid reactive substances, **Solvents:** Met=Methanol, Aq=Aqueous, Alc=Alcohol, Et=ethanol, EtyAl=Ethyl Alcohol, EtyAc=Ethyl acetate, Act=Acetone, n-Hex=n-hexane, MCh:Met=Methylene Chloride:methanol, Hex=Hexane, Bnz=Benzene, Met-HCl=Methanol-HCl, PetEth=Petroleum ether, Chlo=Chloroform, DCM=Dichloro methane, FTC=Ferric Thiocyanate, TBA=Thiobarbituric acid, AST=Aspartate aminotransferase, ALT=Alanine aminotransferase, GPX=Glutathione peroxidase,

Plant parts:

L=Leaves, F=Fruits, Fl=Flowers, S=Stem, SB=Stem Bark, R=Roots, Rh=Rhizome, Bu=Bulb, WP= Whole plant, Se= Seeds, LS=Leafy Shoot, Sh=Shoot, MJ=Milky Juice, YSL=Young Shoot Leaves, B=Bark, RB=Root Bark, T=Twigs, AR= Aerial Root, AP=Aerial part, UdP=Underground Part, P=Pods, Tu=Tubers, RS= Root stolen, FL=Fleshy leaf, LG=Leaf gall, WF=Whole Fruit, St=Stigma, Fp=Fruit pulp, Fruit skin=Fs, Ec=Epicarp, HW=Heart wood, Pe=Peel, Ri=Rind

bark and *P. pterocarpum* leaf showed higher nitric oxide inhibition. Some plants of Zingiberaceae family were studied by Nag *et al.*, (2019), using DNA protection assay for their antioxidant potential.

By using DPPH free radical scavenging assay, Chauhan *et al.*, (2020) and Singh *et al.*, (2020) examined free radical scavenging activity of *Geranium nepalense* Sweet. and *Caltha palustris* L., respectively. Arulkumar *et al.*, (2020) tested the antioxidant potential of the leaves of three Indian mangroves by using various radical scavenging methods and found that all the plants showed increase in antioxidant property in dose dependent manner. Same pattern was shown by *Cissus quadrangularis* (L.) aerial part extracts when analyzed for antioxidant activity by various radical scavenging methods (Dhanasekaran, 2020).

CONCLUSION

According to the table, more than eighty families of plants have been analyzed for antioxidant potential and among all the families, medicinal plants belong to family Fabaceae are most studied for antioxidant activity followed by Lamiaceae, Asteraceae, Solanaceae, Zingiberaceae. Table also suggests that the *Ocimum sanctum*, *Terminalia chebula*, *Cassia fistula*, *Achyranthes aspera*, *Syzygium cumini*, *Tinospora cordifolia*, *Moringa oleifera* and *Centella asiatica* are the medicinal plants which are highly investigated by different researches at different periods of time. About the solvent, table expressed that methanol was highly used for extraction followed by aqueous solvent. DPPH free radical scavenging method was found to be most common method for testing free radical scavenging activity and Ascorbic acid followed by BHT was considered as standard in most of the cases as per the table listing medicinal plants, tested for antioxidant activity.

REFERENCES

- Ahmed, D., V. Kumar, M. Sharma and A. Verma (2014). Target guided isolation, *in vitro* antidiabetic, antioxidant activity and molecular docking studies of some flavonoids from *Albizia Lebbeck* Benth. bark. *BMC complementary and alternative medicine*, 14(1): 155.
- Akter, K., E.C. Barnes, W.L. Loa-Kum-Cheung, P. Yin, M. Kichu, J.J. Brophy, R.A. Barrow, I. Imchen, S.R. Vemulpad and J.F. Jamie (2016). Antimicrobial and antioxidant activity and chemical characterisation of *Erythrina stricta* Roxb. (Fabaceae). *Journal of ethnopharmacology*, 185: 171-181.
- Anandjiwala, S., H. Srinivasa, J. Kalola and M. Rajani (2007). Free-radical scavenging activity of *Bergia suffruticosa* (Delile) Fenzl. *Journal of Natural Medicines*, 61(1): 59-62.
- Aqil, F., I. Ahmad and Z. Mehmood (2006). Antioxidant and free radical scavenging properties of twelve traditionally used Indian medicinal plants. *Turkish journal of Biology*, 30(3): 177-183.

- Arulkumar, A., K.S. Kumar and S. Paramasivam (2020). Antibacterial and *in vitro* antioxidant potential of Indian mangroves. *Biocatalysis and Agricultural Biotechnology*, 23: 101491.
- Auddy, B., M. Ferreira, F. Blasina, L. Lafon, F. Arredondo, F. Dajas, P.C. Tripathi, T. Seal and B. Mukherjee (2003). Screening of antioxidant activity of three Indian medicinal plants, traditionally used for the management of neurodegenerative diseases. *Journal of Ethnopharmacology*, 84(2-3): 131-138.
- Badami, S. and K.P. Channabasavaraj (2007). *In vitro* antioxidant activity of thirteen medicinal plants of India's western ghats. *Pharmaceutical biology*, 45(5): 392-396.
- Bajpai, M., A. Pande, S.K. Tewari and D. Prakash (2005). Phenolic contents and antioxidant activity of some food and medicinal plants. *International journal of food sciences and nutrition*, 56(4): 287-291.
- Bala, K., J. Rana and A. Sagar (2019). Antibacterial and antioxidant potential of *Arisaema jacquemontii* Blume from Manali, Himachal Pradesh. *Bulletin of Pure & Applied Sciences-Botany*, 38(1): 23-33.
- Balakrishnan, B., S. Paramasivam and A. Arulkumar (2014). Evaluation of the lemongrass plant (*Cymbopogon citratus*) extracted in different solvents for antioxidant and antibacterial activity against human pathogens. *Asian Pacific Journal of Tropical Disease*, 4: S134-S139.
- Banerjee, A., Dasgupta, N. and De, B. (2005). *In vitro* study of antioxidant activity of *Syzygium cumini* fruit. *Food chemistry*, 90(4): 727-733.
- Baravalia, Y., M. Kaneria, Y. Vaghasiya, J. Parekh and S. Chanda (2009). Antioxidant and antibacterial activity of *Diospyros ebenum* Roxb. leaf extracts. *Turkish Journal of Biology*, 33(2): 159-164.
- Bhatt, P.R., U.D. Patel, C.M. Modi, K.B. Pandya and H.B. Patel (2019). Thin-layer chromatography and *in vitro* free radical scavenging activity of few medicinal plants from the surroundings of Junagadh, Gujarat, India. *Annals of Phytomedicine*, 8(1): 45-55.
- Bhattacharyya, P., S. Kumaria, N. Job and P. Tandon (2015). Phyto-molecular profiling and assessment of antioxidant activity within micropropagated plants of *Dendrobium thyrsiflorum*: a threatened, medicinal orchid. *Plant Cell, Tissue and Organ Culture (PCTOC)*, 122(3): 535-550.
- Chaudhuri, D., N.B. Ghate, R. Sarkar and N. Mandal (2012). Phytochemical analysis and evaluation of antioxidant and free radical scavenging activity of *Withania somnifera* root. *Asian J Pharm Clin Res*, 5(4): 193-199.
- Chauhan, S., A. Sagar and J. Rana (2020). Analysis of antibacterial and antioxidant activity of *Geranium nepalense* sweet. *Plant Archives*, 20(2): 7543-7548.
- Devi, H.P., P.B. Mazumder and L.P. Devi (2015). Antioxidant and antimutagenic activity of *Curcuma caesia* Roxb. rhizome extracts. *Toxicology Reports*, 2: 423-428.
- Dhanasekaran, S. (2020). Phytochemical characteristics of aerial part of *Cissus quadrangularis* (L) and its *in vitro* inhibitory activity against leukemic cells and antioxidant properties. *Saudi Journal of Biological Sciences*. 30: 30.
- Dhanya Shree, V.S., A. Ayesha, G.K. Saema Noorain and B.K. Sahana (2018). Preliminary phytochemical analysis, antimicrobial and antioxidant activity of *Smilax zeylanica* L.(Smilacaceae). *Journal of Drug Delivery & Therapeutics*, 8(4): 237-243.
- Edwin, S., E.E. Jarald, L. Deb, A. Jain, H. Kinger, K.R. Dutt and A.A. Raj (2008). Wound healing and antioxidant activity of *Achyranthes aspera*. *Pharmaceutical biology*, 46(12): 824-828.
- Eshwarappa, R.S.B., R.S. Iyer, S.R. Subbaramaiah, S.A. Richard and B.L. Dhananjaya (2014). Antioxidant activity of *Syzygium cumini* leaf gall extracts. *BioImpacts: BI*, 4(2): 101.
- Farber, J.L. (1994). Mechanisms of cell injury by activated oxygen species. *Environmental Health Perspectives*, 102: 17-24.
- Ghagane, S.C., S.I. Puranik, V.M. Kumbar, R.B. Nerli, S.S. Jalalpure, M.B. Hiremath, S.S. Neelagund and R. Aladakatti (2017). *In vitro* antioxidant and anticancer activity of *Leea indica* leaf extracts on human prostate cancer cell lines. *Integrative medicine research*, 6(1): 79-87.
- Giri, L., P. Dhyani, S. Rawat, I.D. Bhatt, S.K. Nandi, R.S. Rawal and V. Pande (2012). *In vitro* production of phenolic compounds and antioxidant activity in callus suspension cultures of *Habenaria edgeworthii*: a rare Himalayan medicinal orchid. *Industrial Crops and Products*, 39: 1-6.
- Govindarajan, R., S. Rastogi, M. Vijayakumar, A. Shirwaikar, A.K.S. Rawat, S. Mehrotra and P. Pushpangadan (2003). Studies on the antioxidant activities of *Desmodium gangeticum*. *Biological and pharmaceutical Bulletin*, 26(10): 1424-1427.
- Guleria, S., A.K. Tikku, G. Singh, A. Koul, S. Gupta and S. Rana (2013). *In vitro* antioxidant activity and phenolic contents in methanol extracts from medicinal plants. *Journal of plant biochemistry and biotechnology*, 22(1): 9-15.
- Gupta, R.C., V. Sharma, N. Sharma, N. Kumar and B. Singh (2008). *In vitro* antioxidant activity from leaves of *Oroxylum indicum* (L.) Vent. -A North Indian highly threatened and vulnerable medicinal plant. *Journal of Pharmacy Research*, 1(1): 65-72.
- Harish, R. and T. Shivanandappa (2006). Antioxidant activity and hepatoprotective potential of *Phyllanthus niruri*. *Food chemistry*, 95(2): 180-185.
- Hogg, N. (1998). Free radicals in disease. *Seminars in Reproductive Endocrinology*, 16: 241-288.

- Ilavarasan, R., M. Malika and S. Venkataraman (2005). Anti-inflammatory and antioxidant activities of *Cassia fistula* Linn bark extracts. *African journal of traditional, complementary and alternative medicines*, 2(1): 70-85.
- Irshad, M., M. Zafaryab, M. Singh and M. Rizvi (2012). Comparative analysis of the antioxidant activity of *Cassia fistula* extracts. *International journal of medicinal chemistry*.
- Jadhav, H.R. and K.K. Bhutani (2002). Antioxidant properties of Indian medicinal plants. *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives*, 16(8): 771-773.
- Jagetia, G.C. and M.S. Baliga (2004). The evaluation of nitric oxide scavenging activity of certain Indian medicinal plants *in vitro*: a preliminary study. *Journal of Medicinal Food*, 7(3): 343-348.
- Jeya, K.R., M. Veerapagu and V. Sangeetha (2019). Antimicrobial and antioxidant properties of *Coriandrum sativum* L. seed essential oil. *American Journal of Essential Oils and Natural Products*, 7(2): 06-10.
- Kalaivani, T. and L. Mathew (2010). Free radical scavenging activity from leaves of *Acacia nilotica* (L.) Wild. ex Delile, an Indian medicinal tree. *Food and Chemical Toxicology*, 48(1): 298-305.
- Kalidindi, N., N.V. Thimmaiah, N.V. Jagadeesh, R. Nandeeep, S. Swetha and B. Kalidindi (2015). Antifungal and antioxidant activities of organic and aqueous extracts of *Annona squamosa* Linn. leaves. *Journal of food and drug analysis*, 23(4): 795-802.
- Kaur, S. and P. Mondal (2014). Study of total phenolic and flavonoid content, antioxidant activity and antimicrobial properties of medicinal plants. *J Microbiol Exp*, 1(1): 00005.
- Keshari, A.K., A. Srivastava, S.R. Upadhyaya and R. Srivastava (2018). Antioxidant and free radicals scavenging activity of medicinal plants. *Journal of Pharmacognosy and Phytochemistry*, 7(3): 1499-1504.
- Koley, T.K., C. Kaur, S. Nagal, S. Walia and S. Jaggi (2011). Antioxidant activity and phenolic content in genotypes of Indian jujube (*Zizyphus mauritiana* Lamk.). *Arabian Journal of Chemistry*, 9: S1044-S1052.
- Kousalya, L. and V.N. Bai (2016). Effect of growth regulators on rapid micropropagation and antioxidant activity of *Canscora decussata* (Roxb.) Roem. & Schult. -A threatened medicinal plant. *Asian Pacific Journal of Reproduction*, 5(2): 161-170.
- Kumar, A., A. Mazumder, J. Vanitha, K. Venkateshwaran, K. Kamalakannan and T. Sivakumar, T (2008). Evaluation of antioxidant activity, phenol and flavonoid contents of some selected Indian medicinal plants. *Pharmacognosy magazine*, 4(13): 143.
- Kumar, G., L. Karthik and K.V.B. Rao (2013). Phytochemical composition and *in vitro* antioxidant activity of aqueous extract of *Aerva lanata* (L.) Juss. ex Schult. Stem (Amaranthaceae). *Asian Pacific Journal of Tropical Medicine*, 6(3): 180-187.
- Kumar, R.S., B. Raj Kapoor and P. Perumal (2012). Antioxidant activities of *Indigofera cassioides* Rottl. Ex. DC. using various *in vitro* assay models. *Asian Pacific journal of tropical biomedicine*, 2(4): 256-261.
- Kumar, R.S., T. Sivakumar, R.S. Sunderam, M. Gupta, U.K. Mazumdar, P. Gomathi, Y. Rajeshwar, S. Saravanan, M.S. Kumar, K. Muruges and K.A. Kumar (2005). Antioxidant and antimicrobial activities of *Bauhinia racemosa* L. stem bark. *Brazilian journal of medical and biological research*, 38(7): 1015-1024.
- Kumar, V., B.J. Gogoi, M.K. Meghvansi, L. Singh, R.B. Srivastava and D.C. Deka (2009). Determining the antioxidant activity of certain medicinal plants of Sonitpur, (Assam), India using DPPH assay. *Journal of Phytotherapy*. 1(1): 49-56.
- Kumaran, A. and R.J. Karunakaran (2006). Antioxidant and free radical scavenging activity of an aqueous extract of *Coleus aromaticus*. *Food chemistry*, 97(1): 109-114.
- Kumaran, A. and R.J. Karunakaran (2007). *In vitro* antioxidant activities of methanol extracts of five *Phyllanthus* species from India. *LWT-Food Science and Technology*, 40(2): 344-352.
- Kumari, A. and P. Kakkar (2008). Screening of antioxidant potential of selected barks of Indian medicinal plants by multiple *in vitro* assays. *Biomedical and environmental sciences*, 21(1): 24-29.
- Kumari, A., A. Sagar and V. Prakash (2019). Studies on antibacterial and antioxidant activity of different extracts of *Clematis grata* WALL. *Plant Archives*, 19(1): 1692-1698.
- Mathew, M. and S. Subramanian (2014). *In vitro* screening for anti-cholinesterase and antioxidant activity of methanolic extracts of ayurvedic medicinal plants used for cognitive disorders. *PLoS one*, 9(1): 86804.
- Mishra, A., S. Kumar, A. Bhargava, B. Sharma and A.K. Pandey (2011). Studies on *in vitro* antioxidant and antistaphylococcal activities of some important medicinal plants. *Cell Mol Biol*, 57(1): 16-25.
- Murthy, K.N.C., A. Vanitha, M.M. Swamy and G.A. Ravishankar (2003). Antioxidant and antimicrobial activity of *Cissus quadrangularis* L. *Journal of medicinal food*, 6(2): 99-105.
- Nag, A. (2019). Evaluation of cytotoxicity and antioxidant properties of some Zingiberaceae plants. *International Journal of Green Pharmacy (IJGP)*, 12(04).
- Nag, G. and B. De (2008). Antioxidant and acetylcholinesterase inhibitory properties of the Indian medicinal plant "Shankhapushpi" used for enhancing memory function. *Journal of Complementary and Integrative Medicine*, 5(1).

- Nagulendran, K.R., S. Velavan, R. Mahesh and V.H. Begum (2007). *In vitro* antioxidant activity and total polyphenolic content of *Cyperus rotundus* rhizomes. *Journal of Chemistry*, 4(3): 440-449.
- Nahak, G. and R.K. Sahu (2011). Phytochemical evaluation and antioxidant activity of *Piper cubeba* and *Piper nigrum*. *Journal of Applied Pharmaceutical Science*, 1(8): 153.
- Naik, G.H., K.I. Priyadarsini, D.B. Naik, R. Gangabhairathi and H. Mohan (2004). Studies on the aqueous extract of *Terminalia chebula* as a potent antioxidant and a probable radioprotector. *Phytomedicine*, 11(6): 530-538.
- Naik, G.H., K.I. Priyadarsini, J.G. Satav, M.M. Banavalikar, D.P. Sohoni, M.K. Biyani and H. Mohan (2003). Comparative antioxidant activity of individual herbal components used in Ayurvedic medicine. *Phytochemistry*, 63(1): 97-104.
- Narayanaswamy, N. and K.P. Balakrishnan (2011). Evaluation of some medicinal plants for their antioxidant properties. *International Journal of PharmTech Research*, 3(1): 381-385.
- Negi, P.S., A.S. Chauhan, G.A. Sadia, Y.S. Rohinishree and R.S. Ramteke (2005). Antioxidant and antibacterial activities of various seabuckthorn (*Hippophae rhamnoides* L.) seed extracts. *Food Chemistry*, 92(1): 119-124.
- Negi, P.S., G.K. Jayaprakasha and B.S. Jena (2003). Antioxidant and antimutagenic activities of pomegranate peel extracts. *Food chemistry*, 80(3): 393-397.
- Nile, S.H., A.S. Nile and Y.S. Keum (2017). Total phenolics, antioxidant, antitumor, and enzyme inhibitory activity of Indian medicinal and aromatic plants extracted with different extraction methods. *3 Biotech*, 7(1): 76.
- Padma, R., N.G. Parvathy, V. Renjith and K.P. Rahate (2013). Quantitative estimation of tannins, phenols and antioxidant activity of methanolic extract of *Imperata cylindrica*. *International Journal of Research in Pharmaceutical Sciences*, 4(1): 73-77.
- Padmaja, M., M. Sravanthi and K.P.J. Hemalatha (2011). Evaluation of antioxidant activity of two Indian medicinal plants. *Journal of Phytology*, 3(3): 86-91.
- Padmanabhan, P. and S.N. Jangle (2012). Evaluation of DPPH radical scavenging activity and reducing power of four selected medicinal plants and their combinations. *Int J Pharm Sci Drug Res*, 4(2): 143-146.
- Parray, J.A., A.N. Kamili, R. Hamid, Z.A. Reshi and R.A. Qadri (2015). Antibacterial and antioxidant activity of methanol extracts of *Crocus sativus* L. cv. Kashmirianus. *Frontiers in Life Science*, 8(1): 40-46.
- Patel, V.R., P.R. Patel and S.S. Kajal (2010). Antioxidant activity of some selected medicinal plants in western region of India. *Advances in Biological research*, 4(1): 23-26.
- Patil, S.M., V.J. Kadam and R. Ghosh (2009). *In vitro* antioxidant activity of methanolic extract of stem bark of *Gmelina arborea* Roxb. (Verbenaceae). *International Journal of PharmTech Research*, 1(4): 1480-1484.
- Prakash, D., S. Suri, G. Upadhyay and B.N. Singh (2007). Total phenol, antioxidant and free radical scavenging activities of some medicinal plants. *International Journal of Food Sciences and Nutrition*, 58(1): 18-28.
- Prakash, V., S. Rana and A. Sagar (2017). Studies on analysis of antibacterial and antioxidant activity of *Prunus persica* (L.) Batsch. *Int J Sci Nat*, 8: 54-58.
- Prakash, V., S. Rana and A. Sagar (2017). Studies on analysis of antioxidant and enzyme inhibitory activity of *Vitex negundo* Linn. *Int. J. Pharmacognosy Pythochem. Res*, 9: 833-839.
- Priya, C.L., G. Kumar, L. Karthik and K.V.B. Rao (2010). Antioxidant activity of *Achyranthes aspera* Linn stem extracts. *Pharmacologyonline*, 2(2): 228-237.
- Rai, S., A. Wahile, K. Mukherjee, B.P. Saha and P.K. Mukherjee (2006). Antioxidant activity of *Nelumbo nucifera* (sacred lotus) seeds. *Journal of ethnopharmacology*, 104(3): 322-327.
- Raja, B. and K.V. Pugalendi (2010). Evaluation of antioxidant activity of *Melothria maderaspatana in vitro*. *Central European Journal of Biology*, 5(2): 224-230.
- Rajeshwar, Y., G.S. Kumar, M. Gupta and U.K. Mazumder (2005). Studies on *in vitro* antioxidant activities of methanol extract of *Mucuna pruriens* (Fabaceae) seeds. *Eur Bull Drug Res*, 13(1): 31-39.
- Rajurkar, N.S. and S.M. Hande (2011). Estimation of phytochemical content and antioxidant activity of some selected traditional Indian medicinal plants. *Indian journal of pharmaceutical sciences*, 73(2): 146.
- Rana, S., V. Prakash and A. Sagar (2017). Studies on analysis of antioxidant and enzyme inhibitory activities of *Solanum indicum* Linn. *IOSR Journal of Pharmacy and Biological Sciences*, 12(4): 21-24.
- Roy, N., R.A. Laskar, I. Sk, D. Kumari, T. Ghosh and N.A. Begum (2011). A detailed study on the antioxidant activity of the stem bark of *Dalbergia sissoo* Roxb., an Indian medicinal plant. *Food chemistry*, 126(3): 1115-1121.
- Sagar A., Aditi and V. Prakash (2018). Studies on antibacterial and antioxidant activity of different extracts of *Trigonella foenum-graecum* Linn. and *Anethum graveolens* Linn. *Plant Archives*, 18(1): 73-80.
- Sagar, A., J. Rana and V. Prakash (2018). Antibacterial and antioxidant activities of two medicinal plants: *Erigeron alpinus* L. and *Gentianella moorcroftiana* Wall. ex G. Don. *Plant Archives*, 18(1): 817-824.
- Saha, S. and R.J. Verma (2016). Antioxidant activity of polyphenolic extract of *Terminalia chebula* Retzius fruits. *Journal of taibah university for science*, 10(6):

805-812.

Indian Journal of Experimental Biology, 44: 993-996.

- Santhosh, S.K., A. Venugopal and M.C. Radhakrishnan (2016). Study on the phytochemical, antibacterial and antioxidant activities of *Simarouba glauca*. *South Indian Journal of Biological Sciences*, 2(1): 119-124.
- Sasikumar, J.M., V. Maheshu, G. Aseervatham and D. Darsini (2010). *In vitro* antioxidant activity of *Hedyotis corymbosa* (L.) Lam. aerial parts. *Indian Journal of Biochemistry and Biophysics*, 47: 49-52.
- Scartezzini, P., F. Antognoni, M.A. Raggi, F. Poli and C. Sabbioni (2006). Vitamin C content and antioxidant activity of the fruit and of the Ayurvedic preparation of *Emblca officinalis* Gaertn. *Journal of ethnopharmacology*, 104(1-2): 113-118.
- Schippmann, U., D.J. Leaman and A.B. Cunningham (1990). Impact of Cultivation and Gathering of medicinal plants on Biodiversity: Global Trends and Issues, In: Biodiversity and the Ecosystem Approach in Agriculture, Forestry and Fisheries. FAO. pp. 1-21.
- Selvi, M.T., R. Thirugnanasampandan and S. Sundarammal (2015). Antioxidant and cytotoxic activities of essential oil of *Ocimum canum* Sims. from India. *Journal of Saudi Chemical Society*, 19(1): 97-100.
- Sen, S., B. De, N. Devanna and R. Chakraborty (2013). Total phenolic, total flavonoid content, and antioxidant capacity of the leaves of *Meyna spinosa* Roxb., an Indian medicinal plant. *Chinese journal of natural medicines*, 11(2): 149-157.
- Sen, T., A.K. Dhara, S. Bhattacharjee, S. Pal and A.K. Nag Chaudhuri (2002). Antioxidant activity of the methanol fraction of *Pluchea indica* root extract. *Phytotherapy Research*, 16(4): 331-335.
- Senthilkumar, N., S. Badami, M.M. Cherian and R.C. Hariharapura (2007). Potent *in vitro* cytotoxic and antioxidant activity of *Careya arborea* bark extracts. *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives*, 21(5): 492-495.
- Shaikh, R., M. Pund, A. Dawane and S. Iliyas (2014). Evaluation of anticancer, antioxidant, and possible anti-inflammatory properties of selected medicinal plants used in Indian traditional medication. *Journal of traditional and complementary medicine*, 4(4): 253-257.
- Sharma, R.K., S. Chatterji, D.K. Rai, S. Mehta, P.K. Rai, R.K. Singh, G. Watal and B. Sharma (2009). Antioxidant activities and phenolic contents of the aqueous extracts of some Indian medicinal plants. *Journal of Medicinal Plants Research*, 3(11): 944-948.
- Sharma, S. and R. Thokchom (2014). A review on endangered medicinal plants of India and their conservation. *J. Crop Weed*, 10(2): 205-218.
- Shirwaikar, A., K.S. Prabhu and I.S.R. Punitha (2006). *In vitro* antioxidant studies of *Sphaeranthus indicus* (Linn.) Shirwaikar, A., Rajendran, K., and C.D. Kumar (2004). *In vitro* antioxidant studies of *Annona squamosa* Linn. leaves. *Indian Journal of Experimental Biology*, 42: 803-807.
- Shukla, S., A. Mehta, J. John, S. Singh, P. Mehta and S.P. Vyas (2009). Antioxidant activity and total phenolic content of ethanolic extract of *Caesalpinia bonducella* seeds. *Food and Chemical Toxicology*, 47(8): 1848-1851.
- Shylesh, B.S. and J. Padikkala (1999). Antioxidant and anti-inflammatory activity of *Emilia sonchifolia*. *Fitoterapia*, 70(3): 275-278.
- Siddhuraju, P and K. Becker (2003). Antioxidant properties of various solvent extracts of total phenolic constituents from three different agroclimatic origins of drumstick tree (*Moringa oleifera* Lam.) leaves. *Journal of agricultural and food chemistry*, 51(8): 2144-2155.
- Siddhuraju, P., P.S. Mohan and K. Becker (2002). Studies on the antioxidant activity of Indian Laburnum (*Cassia fistula* L.): a preliminary assessment of crude extracts from stem bark, leaves, flowers and fruit pulp. *Food chemistry*, 79(1): 61-67.
- Singh, A.P. (2005). Promising phytochemicals from Indian medicinal plants. *Ethnobotanical leaflets*, 18.
- Singh, G., A.K. Passari, V.V. Leo, V.K. Mishra, S. Subbarayan, B.P. Singh, B. Kumar, S. Kumar, V.K. Gupta, H. Lalhlenmawia and S.K. Nachimuthu (2016). Evaluation of phenolic content variability along with antioxidant, antimicrobial, and cytotoxic potential of selected traditional medicinal plants from India. *Frontiers in Plant Science*, 7: 407.
- Singh, J.P., A. Kaur, N. Singh, L. Nim, K. Shevkani, H. Kaur and D.S. Arora (2016). *In vitro* antioxidant and antimicrobial properties of jambolan (*Syzygium cumini*) fruit polyphenols. *LWT-Food Science and Technology*, 65: 1025-1030.
- Singh, M., N.K. Thakur and A. Sagar (2020). Studies on antibacterial and antioxidant activities of *Caltha palustris* L. *Plant Archives*, 20(2): 6243-6247.
- Singh, R.P., K.N. Chidambara Murthy and G.K. Jayaprakasha (2002). Studies on the antioxidant activity of pomegranate (*Punica granatum*) peel and seed extracts using *in vitro* models. *Journal of agricultural and food chemistry*, 50(1): 81-86.
- Sini, K.R., B.N. Sinha and M. Karpagavalli (2010). Determining the antioxidant activity of certain medicinal plants of Attapady, (Palakkad), India using DPPH assay. *Current botany*, 1(1): 13-16.
- Soni, A. and S. Sosa (2013). Phytochemical analysis and free radical scavenging potential of herbal and medicinal plant extracts. *Journal of Pharmacognosy and Phytochemistry*, 2(4): 22-29.
- Srivastava, J.P., J. Lambert and N. Vietmeyer (1996). Medicinal plants: An expanding role in development. *The World*

- Bank. of medicinal plant extracts for antioxidant activity. *Journal of Medicinal Plants Research*, 3(8): 608-612.
- Thakur, S., A. Sagar and V. Prakash (2019). Studies on antibacterial and antioxidant activity of different extracts of *Spilanthes acmella* L. *Plant Archives*, 19(1): 1711-1717.
- Venkatachalam, U. and S. Muthukrishnan (2012). Free radical scavenging activity of ethanolic extract of *Desmodium gangeticum*. *Journal of Acute medicine*, 2(2): 36-42.
- Tilak, J.C., Adhikari, S., and Devasagayam, T. P. (2004). Antioxidant properties of *Plumbago zeylanica*, an Indian medicinal plant and its active ingredient, plumbagin. *Redox report*, 9(4): 219-227.
- Verma, K., D. Shrivastava and G. Kumar (2015). Antioxidant activity and DNA damage inhibition *in vitro* by a methanolic extract of *Carissa carandas* (Apocynaceae) leaves. *Journal of Taibah University for Science*, 9(1): 34-40.
- Tripathi, Y.B. and A.K. Upadhyay (2001). Antioxidant property of *Mucuna pruriens* Linn. *Current Science*, 80(11): 1377-1378.
- Vijayalakshmi, M.A. and N.C. Sarada (2008). Screening of *Costus speciosus* extracts for antioxidant activity. *Fitoterapia*, 79(3): 197-198.
- Tripathi, Y.B., A.K. Upadhyay and P. Chaturvedi (2001). Antioxidant property of *Smilax china* Linn. *Indian Journal of Experimental Biology*, 39: 1176-1179.
- Zahin, M., I. Ahmad and F. Aqil (2010). Antioxidant and antimutagenic activity of *Carum copticum* fruit extracts. *Toxicology in Vitro*, 24(4): 1243-1249.
- Veeru, P., M.P. Kishor and M. Meenakshi (2009). Screening