



A STUDY OF CHEMICAL COMPOSITION AND EFFECTIVE MATERIALS IN CHAMOMILE FLOWERS (*MATRICARIA CHAMOMILLA* L.)

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Abstract

This experiment was conducted in Muthanna province - Samawah southern Iraq during the period 1/3 – 30/4/ 2019 and aimed to determine the chemical composition and detection of effective materials in chamomile flowers. The results showed that the average of Dry matter, moisture, Crud Protein, Fat and Ash in Chamomile flowers was 97.145, 2.855, 12.627, 5.821 and 3.811% respectively, also all samples contain Tannins, glycosides and flavones and 90% of the samples contain alkaloid and resins.

Key word: chemical composition, effective materials, chamomile flowers.

Introduction

There are many substances found in herbs show prophylactic and therapeutic effects and over the last years there has been an increasing interest in utilization herbs in the medical field as an alternative to conventional treatments. Chamomile is a one of important herbal medicinal plant with a height of (15-50 cm) and flowers after a few weeks of planting (Chakravarty, 1976). This plant spreads in Southern and Eastern Europe, Mediterranean white and USA, flowers of this plant contain active compounds such as volatile oil is extracted by steam distillation and consists of alphabisabolol, bisabolol oxide – A, bisabolol oxide – B, trans –farnesene and spathulenol (Sharafzadeh and Alizadeh, 2011; Ljiljana *et al.*, 2016) also its contain phenolic compounds as flavonoides like flavon glycoside, glycoside apigenin and luteolin (Singh *et al.*, 2011). It also contains sedative and anti-heat compounds such as Salicylates, which is one of the components of Aspirin and according to Presibella *et al.*, (2006) its improves the building of damaged tissue and enhances the efficacy of immuno compromised leukocytes and its used in herbal medicine for a sore stomach, irritable bowel syndrome and as a gentle sleep aid (McKay and Blumberg, 2006). It is also used as an anti-inflammatory and bactericidal (AL-Rajab, 2007; Safaa *et al.*, 2008). Therefore, this study aims to determine the chemical composition and detection of effective materials in chamomile flowers.

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Materials and Methods

This experiment was conducted in Muthanna province-Samawah southern Iraq during the period 1/3-30/4/ 2019 and aimed to determine the chemical composition and detection of effective materials in chamomile flowers. 100 samples of Chamomile flowers samples were collected from local markets in al Samawah.

Chemical composition

After the samples were mixed well, 10 samples weighing 5 g per sample were taken to determine the chemical composition of the chamomile flower according to AOAC, (1975).

- Moisture : Determined using Oven drying method at 105°C for 24 h.
- Protein: Determined according to Kildahl method
- Fat : Determined according to Soxhlet method.
- Ash : Determined according to Dry Ashing method.

Detection of effective materials

Alcohol extract of chamomile flower was prepared according to Shareef (1998). Tannins, glycosides, flavones, alkaloid and resins were detected according to Harborn, (1984) and WHO, (2011).

Results and Discussion

Chemical compositions

The average of Dry matter, moisture, Crud Protein, Fat and Ash in Chamomile flowers are shown in table 2

Table 1: Chemical compositions (%) of Chamomile (mean±SE).

Compositions	%
Dry matter	97.145 ± 1.53
moisture	2.855 ± 0.57
Crud Protein	12.627 ± 0.32
Fat	5.821 ± 0.74
Ash	3.811 ± 0.34

Table 2: Detection of effective materials in chamomile flowers.

Effective materials	Samples No.											%	
		1	2	3	4	5	6	7	8	9	10		
Tannins		+	+	+	+	+	+	+	+	+	+	+	100
Glycosides		+	+	+	+	+	+	+	+	+	+	+	100
Flavones		+	+	+	+	+	+	+	+	+	+	+	100
Alkaloid		+	+	+	+	+	-	+	+	+	+	+	90
Resins		+	+	-	+	+	+	+	+	+	+	+	90

+ Means the presence of active substance; - Means Lack of active substance.

and its reached 97.145, 2.855, 12.627, 5.821 and 3.811% for Dry matter, moisture, Crud Protein, Fat and Ash Respectively.

Detection of effective materials

Table 2 shows the results of the detection of effective materials in chamomile flowers, which includes Tannins, glycosides, flavones, alkaloid and resins. From table we can note that all samples contain Tannins, glycosides and flavones also 90% of the samples contain alkaloid and resins.

The result is consistent with Newall *et al.*, (1996) and AL-Rajab, (2007) whose found that effective materials in chamomile flowers are: chamazulene, bisabolol, flavonoids such as quercetin, apigenin, luteolin coumarins: scopoletin-7-glucoside and other components like angelic and tiglic acid esters, anthemic acid, fatty acids, choline, Tannins, glycosides and alkaloid. The flavonoids apigenin and luteolin possess anti-inflammatory, carminative and antispasmodic properties. Apigenin binds to GABA receptors and has a mild sedative effect. The spiroethers cis- and trans-en-yn-dicycloether occur in German chamomile. They are spasmolytic, antifungal and anti-inflammatory, the coumarin umbelliferone is reported

to be antispasmodic, antibacterial and antifungal (Singh *et al.*, 2011, Sharafzadeh and Alizadeh, 2011).

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