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DETECTION OF BIOACTIVE COMPOUNDS OF *EUPHYDRYAS AURINIA* USING FOURIER-TRANSFORM INFRARED SPECTROSCOPIC PROFILE AND EVALUATION OF ITS ANTI-FUNGAL ACTIVITY

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Abstract

The marsh fritillary (*Euphydryas aurinia*) is a butterfly of the family Nymphalidae. The purpose of our research was screening of the bioactive-chemical compounds of *Euphydryas aurinia* using fourier transform infrared spectrophotometer analysis. Six bioactive compounds were identified in the methanolic extract of *Euphydryas aurinia*. The Fourier trans form infra-red spectro-photometer analysis of *Euphydryas aurinia* proved the presence of functional group assignment Alkenes, Alkyl halides, Amide and Alkane with Intensity 69.821 (Strong), 60.821 (Strong), 81.984 (Strong), 80.082 (Bending), 84.065 (Strong), 79.953 (Strong) and Peak (Wave number cm^{-1}) 665.44, 1018.41, 1238.30, 1598.99, 2848.86 and 2918.30.

Key words : FT-IR analysis, *Euphydryas aurinia*, bioactive.

Introduction

Insects have an important role in the biodegradation of waste and cleaning of dead materials, breaking down organic materials so that fungi and bacteria can consume them (Hameed *et al*., 2015; Shareef *et al*., 2016; Mohammed *et al*., 2016). In this way, nutrients of dead organisms are readily available in the soil for absorption by plants. Insects provide humans with a range of valuable objects. Honey is one of the most common insect products. Insect dye is used in the coloring of foods and pharmaceuticals (Altameme *et al*., 2015). Other medical applications in worm therapy and in the treatment of wounds and burns (Hussein *et al*., 2016). Finally, like many other natural resources, habitat damage, such as deforestation, Pollution (insecticides) has increased the pressure on the trees are often cut down to increase (Kadhim *et al*., 2016) and facilitate the collection of insects, as in the case of the larva that feeds on the leaves of the tree (Hussein *et al*., 2016) with clear Often, Climate change is likely to affect edible insects are still unknown.

Materials and Methods

Preparation of sample

20 g of insect powder was dissolved in 150 ml of methanol for 15 hours. For the purpose of separating and isolating the insect extract (Jaddoa *et al*. ,2016; Hameed *et al*., 2016; Kadhim *et al*., 2016; Ubaid *et al*., 2016; Hameed *et al*., 2017). Whatman No.1 was used. In addition, he was nominated again using sodium sulfate to remove moisture.

Fourier trans form infrared spectro-photometer

Euphydryas aurinia was treated with its own powder by FTIR spectroscopy (Shimadzu, IR-Affinity, Jap.) (Kadhim *et al*., 2017; Ahmed *et al*., 2017; Fakhir *et al*., 2017; Mekhlef *et al*., 2017). Infrared between 400 nm and 4000 nm the sample had been run.

Results and Discussion

Extraction yields and results of the chemical screening of *Euphydryas aurinia* are given in table 1. The methanolic extract gave the higher extraction yields. The chemical screen permitted to detect: The Fourier trans form infra-red spectro-photometer analysis of

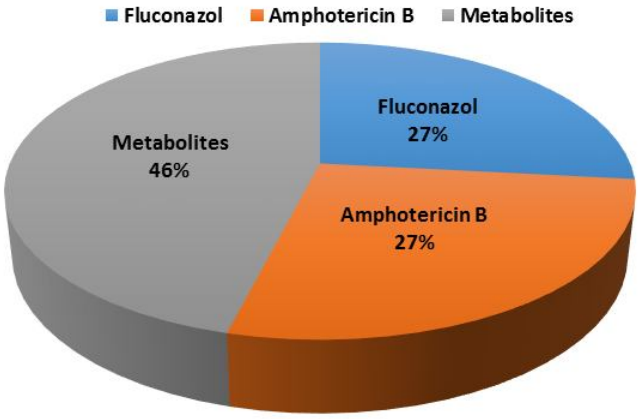

Fig. 1 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Aspergillus flavus*.

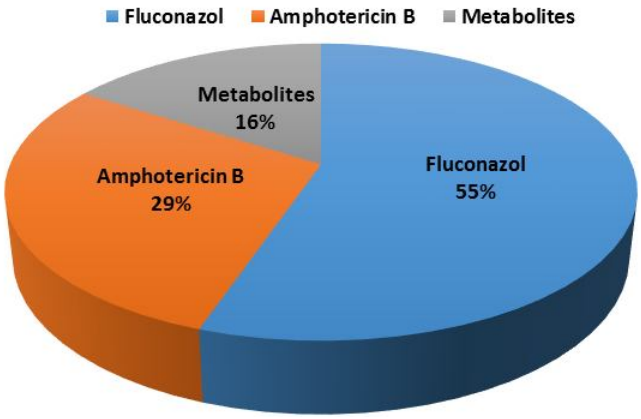

Fig. 2 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Penicillium expansum*.

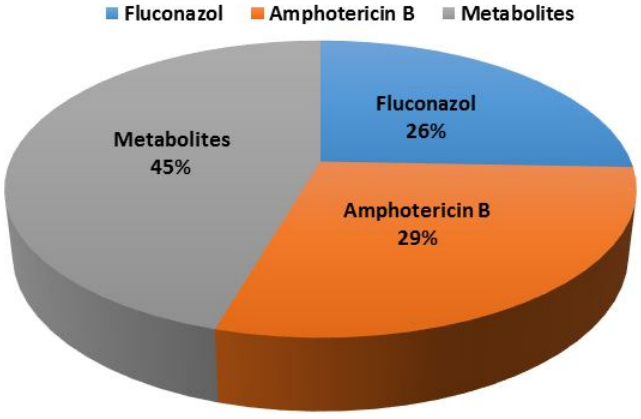

Fig. 3 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Aspergillus terreus*.

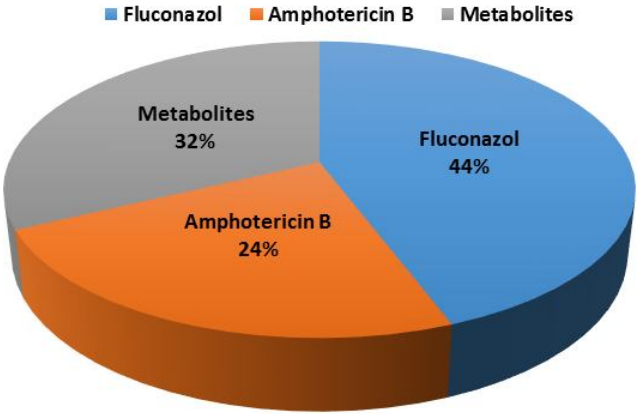

Fig. 4 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Trichoderma horzianum*.

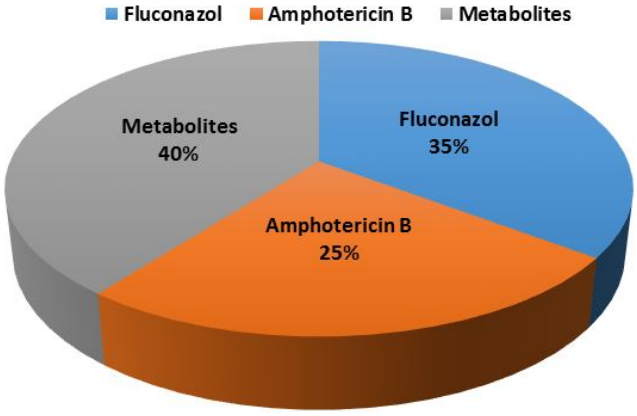

Fig. 5 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Saccharomyces cerevisiae*.

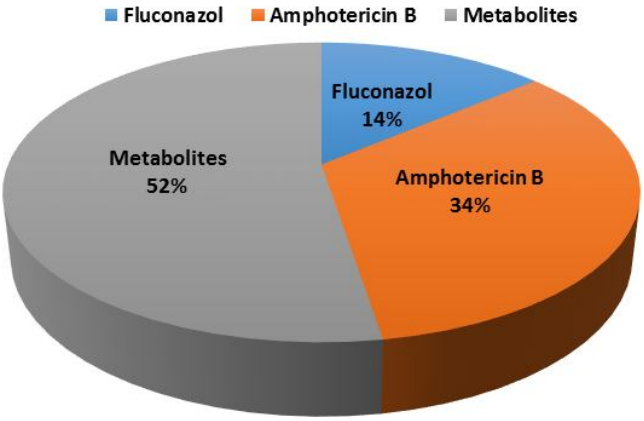

Fig. 6 : Fluconazol, Amphotericin B and Metabolite products as antifungal activity against *Candida albicans*.

Euphydryas aurinia found functional group assignment Alkenes, Alkyl halides, Amide and Alkane with Intensity 69.821 (Strong), 60.821 (Strong), 81.984 (Strong), 80.082 (Bending), 84.065 (Strong), 79.953 (Strong) and Peak (Wave number cm^{-1}) 665.44, 1018.41, 1238.30, 1598.99, 2848.86 and 2918.30.

The larval stage lasts for about 7-8 months and hibernation occurs during winter. These larvae depend on the plant *Succisa pratensis*, for feeding as well as for hibernation (Kadhim *et al*., 2016), so that the silk nets are on the plant and thus enter the larvae in the case of known hibernation. Because the female butterflies can lay their eggs in batches on the plant, around the ovary site the females are selective. A little while ago, the

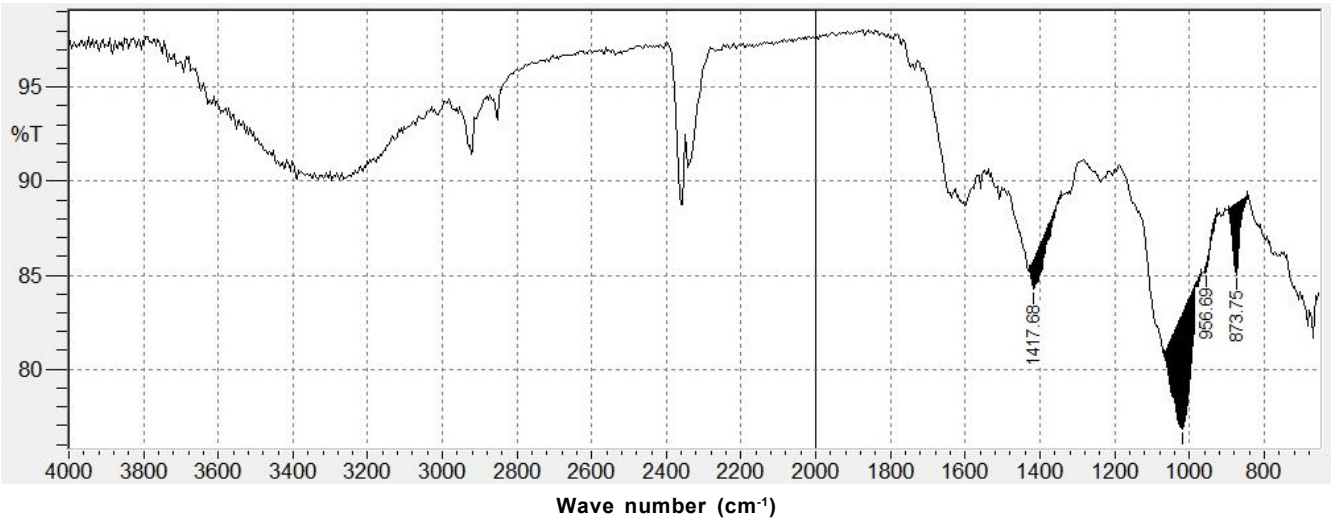

Fig. 7. FT-IR profile solid analysis of *E. aurinia*.

Table 1 : Peak values *Euphydryas aurinia* using FT-IR.

No.	Peak-wave number cm^{-1}	Intensity	Corr. Intensity	Type-Intensity	Bond	Type-Vibration	Functional group assignment	Group-frequency
1.	665.44	69.821	1.206	Strong	=C – H	Bending	Alkenes	650-1000
2.	1017.41	60.821	1.180	Strong	C - F	Stretch	Alkyl-halides	1000-1400
3.	1237.30	81.984	2.768	Strong	C - F	Stretch	Alkyl-halides	1000-1400
4.	1598.99	80.082	1.083	Bending	N - H	Stretch	Amide	1550-1640
5.	2848.86	84.065	6.519	Strong	C - H	Stretch	Alkane	2850-3000
6.	2918.30	79.953	8.975	Strong	C - H	Stretch	Alkane	2850-3000

population of Irenia. This is the main reason behind so many plants (Ubaid *et al*., 2016; Hussein *et al*., 2016; Hussein *et al*., 2016; Ubaid *et al*., 2016; Hussein *et al*., 2017; Hadi *et al*., 2017). This species lives in swampy, grassy and pasture areas. *E. aurinia* can live in two types of areas: wet herbal areas acidic and dry herbal and plants that grow in soil containing lemon.

Conclusion

Six bioactive compounds were identified in the methanolic extract of *Euphydryas aurinia*. The Fourier transform infrared spectrophotometer analysis of *Euphydryas aurinia* proved the presence of functional group assignment Alkenes, Alkyl halides, Amide and Alkane with intensity 69.821 (Strong), 60.821 (Strong), 81.984 (Strong), 80.082 (Bending), 84.065 (Strong), 79.953 (Strong) and Peak (Wave number cm^{-1}) 665.44, 1018.41, 1238.30, 1598.99, 2848.86 and 2918.30.

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