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THE BRINE SHRIMP *(ARTEMIA SALINA)* LETHALITY OF SOME FERULAGO SPECIES

E. GÜRKAN*, O. T. TÜZÜN*, F. HIRLAK*, S. DOĞANCA*

SUMMARY

In this work the bio-activities of the extracts obtained from ***F. asparagifolia*** Boiss., ***F. humilis*** Boiss., ***F. aucheri*** Boiss. (Umbelliferae) are investigated using the Brine shrimp method.

ÖZET

Bu çalışmada ***F. asparagifolia*** Boiss., ***F. humilis*** Boiss. ve ***F. aucheri*** Boiss. (Umbelliferae)den hazırlanan ekstrelerin Brine shrimp yöntemi kullanılarak biyoaktiviteleri araştırılmıştır.

Key words: ***Ferulago aucheri, F. humilis, F. asparagifolia,*** Brine shrimp ***(Artemia salina).***

INTRODUCTION

Although ***Ferulago*** species (Umbelliferae) are closely related to the genus ***Ferula,*** they are not investigated as much as the latter and pharmacological works on these plants are not reported. This is why we wanted to work on some of these species in order to have information about their bioactivities. In our previous studies on ***Ferulago aucheri*** (1), ***Ferulago asparagifolia*** (2) and ***Ferulago humilis*** (3) coumarins, flavonoids and aromatic compounds were isolated and identified.

* Univ. of Marmara, Faculty of Pharmacy, Dept. of Pharmacognosy, 81010 Haydarpaşa, İstanbul, Türkiye.

This work is concerned with the bio-assay of three ***Ferulago*** species, ***F. asparagifolia*** Boiss., ***F. humilis*** Boiss., ***F. aucheri*** Boiss. (Umbelliferae) using the Brine shrimp ***(Artemia salina)*** lethality bio-assay. Plants were collected from Western Türkiye in June 1990, voucher specimens are deposited in the Herbarium of the Faculty of Pharmacy, University of Marmara (identified by E. TUZLACI) (MARE 2737, 3219, 2009).

MATERIAL AND METHOD

The petroleum ether, chloroform and ethanol extracts obtained from the above plants are made up to dryness and the dry residues are dissolved in chloroform. Then each chloroform extract is applied to the Brine shrimp bio-assay, which is prepared as follows (4).

1. 3.8 g sea salt is dissolved in 100 ml of water.

2. Sea water is put into the tank and shrimp eggs are added to the tank.

3. The shrimp are kept for two days to hatch and mature.

4. Vials for testing are prepared in 1000, 100 and 10 µg ml^{-1} concentrations and vials are prepared for each concentration. 20 mg of sample is weighed and dissolved in 2 ml of solvent. From this solution 500, 50 and 5 µl are transferred to vials corresponding to 1000, 100 and 10 µg ml^{-1} respectively. Solvent evaporated under nitrogen.

5. 2 days later when the shrimp larvae are ready, 5 ml sea water is added to each vial and 10 shrimp per vial is counted.

6. 24 h later the number of survivors is counted and recorded.

7. Data is analysed with a computer to determine LC_{50} values and 95 % confidence intervals.

RESULTS AND DISCUSSION

As can be seen from Table 1, the chloroform and ethanol extracts obtained from the whole plant of ***F. humilis*** are the most bio-active ones among the ***Ferulago*** species examined. The second most bio-active sample is the leaves of ***F. aucheri*** extracted in petroleum ether. The fruits of ***F. aucheri*** extracted in petroleum ether, leaves of ***F. humilis*** extracted in petroleum ether, the whole of the same plant, extracted in the same solvent and the aerial part and leaves of ***F. asparagifolia,*** extracted in petroleum ether are not accepted to be bio-active,

Table 1: Brine shrimp lethality of *F. humilis, F. aucheri* and *F. asparagifolia*

BOTANICAL NAME	MORPHOLOGICAL NAME	TYPE OF EXTRACT	BRINE SHRIMP LC_{50} (ppm)
UMBELLIFERAE			
1. Ferulago aucheri	A P, L	PE	146.9036
2. Ferulago aucheri	F	PE	> 1000
3. Ferulago humilis	W P	Chl., E	30.7652
4. Ferulago humilis	A P, L	PE	> 1000
5. Ferulago humilis	W P	PE	> 1000
6. Ferulago asparagifolia	A P, L	PE	> 1000

Legend: L: Leaves, WP: Whole Plant, AP: Aerial Part, F: Fruit, E: Ethanol Extract, PE: Petroleum Ether Extract, Chl.: Chloroform Extract

for their LC_{50} values have proven to be more than 1000 when examined with the Brine shrimp bioassay.

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