

AN INVESTIGATION ON THE ANTIMICROBIAL ACTIVITY OF SOME FERULAGO SPECIES

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Summary : The extracts obtained from *F.asparagifolia* Boiss., *F.aucheri* Boiss. and *F.humilis* Boiss.(Umbelliferae) are applied to five different bacteria, thus the antimicrobial effects of these species are investigated.

Key words : *Ferulago aucheri* , *Ferulago asparagifolia* , *Ferulago humilis* , antimicrobial activity

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INTRODUCTION

Ferulago species (Umbelliferae) are closely related to the genus *Ferula*, but they are not investigated as much as the latter. That is why, it is rather hard to find pharmacological works concerning these species. So, for the enrichment of the information about these species, we decided to work on the antimicrobial activity of them.

In our previous studies coumarins, flavonoids and new aromatic compounds were isolated and identified from *Ferulago aucheri* (1), *Ferulago asparagifolia*(2) and *Ferulago humilis*(3).

This work is concerned with the antimicrobial activity of three *Ferulago* species, *F. asparagifolia* Boiss. *F. humilis* Boiss. and *F. aucheri* Boiss. (Umbelliferae), using the filter paper disc method(4).

Plants were collected from Western Türkiye (İzmir) in June 1990, voucher specimens are deposited in the Herbarium of the Faculty of Pharmacy, Univ. of Marmara (identified by E.TUZLACI).

MATERIAL AND METHOD

The petroleum ether, chloroform and ethanol extracts obtained from the above plants are evaporated to dryness and the residues are dissolved in chloroform (Final concentrations are 0.1 and 0.2 g/ml) and applied to the filter paper disc method.

Microorganisms used are *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Candida albicans*.

Filter Paper Disc Method:

The method is performed in Saboraud dextrose agar, Saboraud dextrose broth, Mueller Hinton agar, Mueller Hinton broth. These agar media are inoculated with 0.5 ml of the 24 h liquid cultures containing 10^7 microorganism/ml. Filter paper discs (5 mm diameter) saturated with each compound solution (100 mg/ml and 200 mg/ml in chloroform) are placed on the indicated agar mediums. The incubation time is 24 h at 37 °C for bacteria and 48 h at 30 °C for *Candida* species. Discs saturated with chloroform were used as control. The diameter of zone inhibition (mm) was measured. The tests are separated to confirm the findings and the average of the reading is taken.

RESULT and DISCUSSION

The samples are tested in two concentrations, one being 100 mg/ml and the other twice as much. The inhibition zones of the leaves and the aerial part of *F. aucheri* extracted in petroleum ether, in both concentrations, have antimicrobial activity against two bacteria (*Staphylococcus aureus*, *Bacillus subtilis*). No doubt, if the concentrations were higher, the activities would be higher because before this work, these samples were tried in lower concentrations and all the results were negative. What's more, if the results are examined, it is easy to see that most if not all of the samples show activities in the higher concentrations (Table 1.)

REFERENCES

1. Doğanca S., Ulubelen A., Tuzlacı E., *Phytochemistry* 30, 2803 (1991).
2. Doğanca S., Tuzlacı E., Ulubelen A., *Fitoterapia* 63, 552 (1992).
3. Doğanca S., Tuzlacı E., Ulubelen A., *J. Fac. Pharm. Istanbul* 26-28, 19 (1990-92).
4. Bauer A.W., Kirby W.W.M., Sherris J.C., Turck M., *Am. J. Clin. Pathol.* 45, 493 (1966).

Botanical Name	Morphological Name	Type of extract	Concentration	Diameter of inhibition zone (mm)					
				S.aureus	B.subtilis	E.coli	P.aureginosa	C.albicans	
<i>F.asparagifolia</i>	L,AP " "	PE "	100mg/ml	-	-	-	-	-	
			200mg/ml	-	-	-	-	-	
<i>F.aucherii</i>	L,AP " "	PE "	100mg/ml	8	8.5	-	8	-	
			200mg/ml	9	8.5	9	-	-	
<i>F.aucherii</i>	F. "	PE "	100mg/ml	-	-	-	-	-	
			200mg/ml	-	9	9	-	-	
<i>F.humilis</i>	WP "	PE "	100mg/ml	-	-	8	8	-	
			200mg/ml	-	9	-	-	-	
<i>F.humilis</i>	L,AP " "	PE "	100mg/ml	-	-	-	-	-	
			200mg/ml	9	-	9	-	-	
<i>F.humilis</i>	WP "	C ₂ EIOH "	100mg/ml	-	-	-	-	-	
			200mg/ml	-	9	-	-	-	

Legend- L:Leaves ;WP:Whole plant; AP:Aerial part ; F:Fruit ;C:Chloroform extract;PE:Petroleum ether extract ; - :No inhibition.

TABLE 1. Antimicrobial activity of some *Ferulago* species.