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EVALUATION OF ANTIPROTOZOAL AND ANTIFUNGAL ACTIVITIES OF TURKISH *ARTEMISIA SANTONICUM* L.

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SUMMARY

Extracts and eudesmanolides from *Artemisia santonicum* were tested for their antiprotozoal and antifungal activities. 8 α-hydroxytaurin was active against *Leishmania donovani* at 100 µg/ml.

ÖZET

Artemisia santonicum ekstre ve eudesmanolid'leri, antiprotozoal ve antifungal aktiviteleri bakımından kontrol edilmiş ve 8 α-hydroxytaurine *Leishmania donovani*'ye 100 µg/ml de aktif bulunmuştur.

Key words: *Artemisia santonicum* eudesmanolides, antiprotozoal and antifungal activities.

INTRODUCTION

The genus *Artemisia* (Compositae) has been represented by twentythree species in Flora of Turkey and is distrubuted mainly in Eastern and Central Ana-

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tolia (1,2). Many species of *Artemisia* have been used in folk medicine (3). Well known is the authelmintic activity of several species. This work is one of a series on the bioactivity of Turkish *Artemisia* (4,5). Here we report antiprotozoal and antifungal activities of extracts and components previously isolated and determined from *A.santonicum* (6).

MATERIAL AND METHODS

- **Plant material:** The aerial parts in flower of *A.santonicum* were collected in Tekirdağ Turkey. Voucher specimens are deposited in the Herbarium of the Faculty of Pharmacy - Istanbul and identified by Prof.Dr. N.Özhatay (ISTE 55992, Septembre 1985 and 1992).

- **Tested samples:** 2 extracts, 4 pure eudesmanolides in a mixture of other eudesmanolides were tested. Preparation of extracts and isolation of eudesmanolides have been previously reported (6).

I = P.ether - Ether - MeOH (1,1,1) Extract

II = Artemin

III = Taurin

IV = 8 α-hydroxytaurin

V = 8 α-acetoxytaurin

VI = Mixture of 8 α-propionlyoxytaurin, 8 α-tigloyloxytaurin and 8 α-isobutyryloxytaurin

VII = EtOH - H_2O (80, 20) Extract

Stock solutions of samples in DMSO were diluted to give serial twofold dilutions that were added to each medium, resulting in concentrations ranging from 50 to 500 µg/ml and the minimal inhibitory concentration (MIC) was determined.

- **Antifungal activity:** 10 yeast and 7 dermatophyte strains were tested

Candida albicans ATCC 2091 (from Institut Pasteur);

Candida albicans Y 0109 and *Candida pseudotropicalis* Y 0601 (from Pfizer);

Candida krusei LM 86; *Candida glabrata* LM 774 and *Candida tropicalis* LM 772 (from Laboratoire de Parasitologie et Immunologie, Faculté de Pharmacie, Montpellier); *Candida parapsilosis; Candida zeylanoides; Cryptoccus neoformans; Trichosporon cutaneum* (from clinical isolates).

Dermatophyte strains were all clinical isolates: *Trichophyton rubrum; Trichophyton mentagrophytes; Trichophyton soudanense; Microsporum canis; Microsporum gypseum; Microsporum persicolor* and *Epidermophyton floccosum.*

Antifungal activity was evaluated *in vitro* with the agar dilution method using yeast nitrogen base (Difco) and Sabouraud - Chlorampenicol agar (Pasteur) as a growth media for yeast and dermatophyte species respectively. The standard reference antifungal agents were amphotericin B for yeast and ketoconazole for dermatophyte (7).

- Antiprotozoal activity.

Trichomonas vaginalis (TV R87); *Entamoeba histolytica* (Rahman); *Leishmania donovani* (LCR) were tested *in vitro* (8,9). Oxoid (Code CM 161) liquid media (10), Jone's liquid media (9) and N.B. liquid media (11) were used as growth media for *Trichomonas, Entamoeba* and *Leishmania* respectively. The antiprotozoal agents tested as standard reference were metronidazole and pentamidine.

RESULTS AND DISCUSSION

Results indicated in Table 1 showed that extracts and compounds from *A.santonicum* had no effect on yeasts and dermatophytes. Samples IV (8 α-hydroxytaurin), V (8 α-acettoxytaurin) and VI (Mixture of 8 α-propionyloxytaurin, 8 α-tigloyloxytaurin and 8 α-isobutyryloxytaurin) were active on the protozoal strains; especially 8 α-hydroxytaurin which showed an activity against *Leishmania donovani* at a concentration of 100 µg/ml.

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Table 1: Antiprotozoal activity of *Artemisia santonicum*

SAMPLES	MIC (µg/ml)		
	Entamoeba histolytica	*Trichomonas vaginalis*	*Leishmania donovani*
I	500	500	500
II	500	500	–
III	500	500	–
IV	500	500	100
V	250	250	250
VI	250	250	–
VII	500	500	500
Métronidazole	5	0.5	–
Pentamidine	–	–	5

(-): no tested.

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