

Antimycotic activity of *Ruta chalepensis* L.

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Introduction

Ruta chalepensis L. (Rutaceae), a perennial herb, widely diffused in the Mediterranean area, with glabrous stem, alternate bi-pinnatisect leaves with narrowly oblong-lanceolate or obovate segments, inflorescence cymose, growing in dry, usually rocky areas, is an ancient medicinal plant still used in the traditional medicine of many countries as a laxative, anti-inflammatory, analgesic, antispasmodic, abortifacient, antiepileptic, emmenagogue and for dermatopathy treatment (Johnson T., 1999).

Pharmacological investigations clearly indicated that the ethanol extract of the aerial part of *R. chalepensis* shares the anti-inflammatory and antipyretic activities of the other common non steroidal anti-inflammatory drugs and has significant dose-dependent central nervous system depressant activity (Mansour S. *et al.*, 1990), while toxicity studies have provided basic information about the possible safe use of this medicinal plant (Shah A.H. *et al.*, 1991).

Phytochemical screening showed that the aerial parts of *R.*

Materials and methods

Plant material

R. chalepensis was collected in the Messina area in April 1999. A voucher specimen of the plant was deposited in the herbarium of the Pharmaco-biological Department of the University of Messina (Italy). The fresh material was immediately lyophilized and powdered.

Preparation of extract

Exhaustive extraction of 10 g of lyophilized and powdered *R. chalepensis* aerial part was carried out in a Soxhlet using ethanol as solvent. The mixture was filtered and the organic solvent removed under vacuum.

Strains

Strains of hyohomycetes isolated from clinical specimens principal-

Assay method

The activity of the extract was evaluated by a method designed by the Department of Microbiological Sciences and Gynaecological Sciences at the University of Catania. It allows the evaluation of the growth of hyphomycetes strains under the action of a concentration gradient of the substance under examination, obtained by the diffusion of three quantities deposited around an inoculum point. In particular, in solid media some pits were created according to the plan in figure 1. Around each pit of 2 mm diameter, into which the inoculum of conidia suspended in sterile distilled water is added, three pits of 3 mm diameter are made: the first along the axis that joins the inoculum pit to the center of the dish, the second and the third on the axis that is perpendicular, passing through the center of

above indicates the absence of activity of the substance in examination. The interval from -1 to 0 was divided into three classes correlated to three levels of activity: low or null ($-0.20 < I$), intermediate ($0.6 \leq I \leq -0.2$), elevated ($-1 \leq I < -0.6$).

Results and discussion

The activity of *Ruta* extract is characterized by a marked variability between the strains of the same species. In fact, the range of the parameter *I* (Fig. 2) varies for *M. canis* from -0.20 to -0.74, for *T. mentagrophytes* from 0 to -0.65 and for *T. rubrum* from 0 to -0.64. From table 1, where the number of strains for each class of parameter *I* is shown, it can be seen that for *M. canis* the ethanol extract

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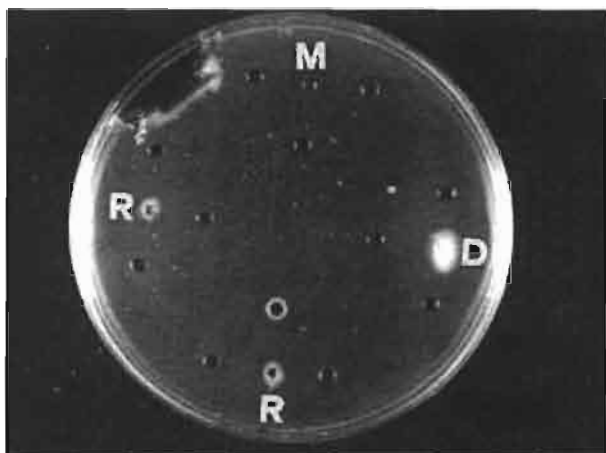


Figure 1. Surface growth area of *M. canis* under the action of a concentration gradient of *Ruta* extract (R), miconazole (M) and DMSO (D)

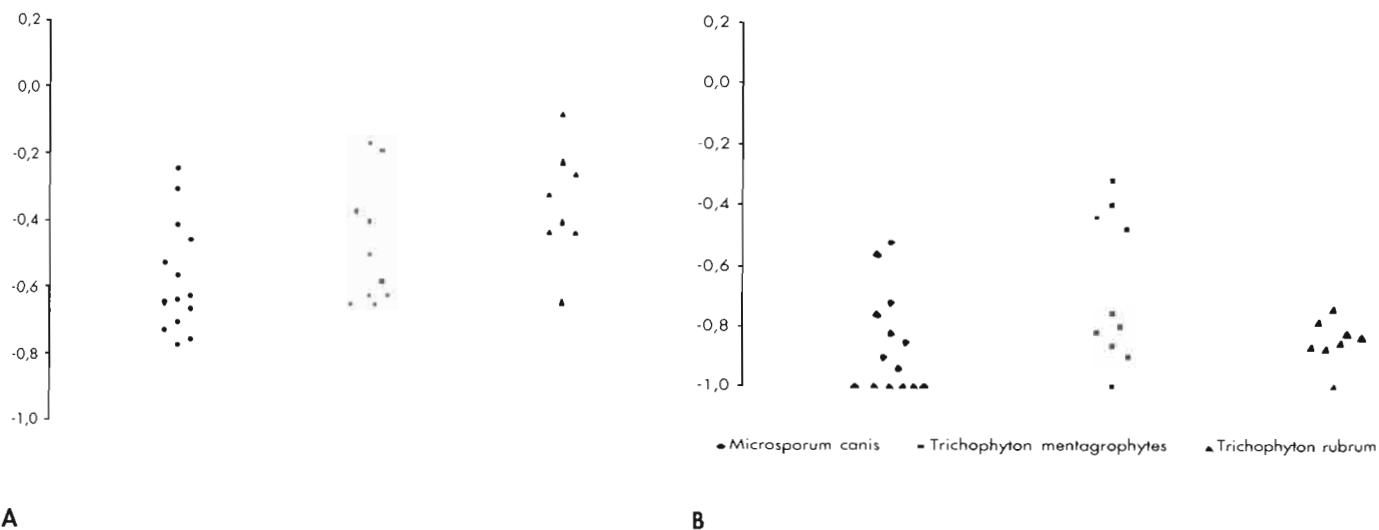


Figure 2. Distribution of I values for *Ruta* extract (A) and miconazole (B) against dermatophytes

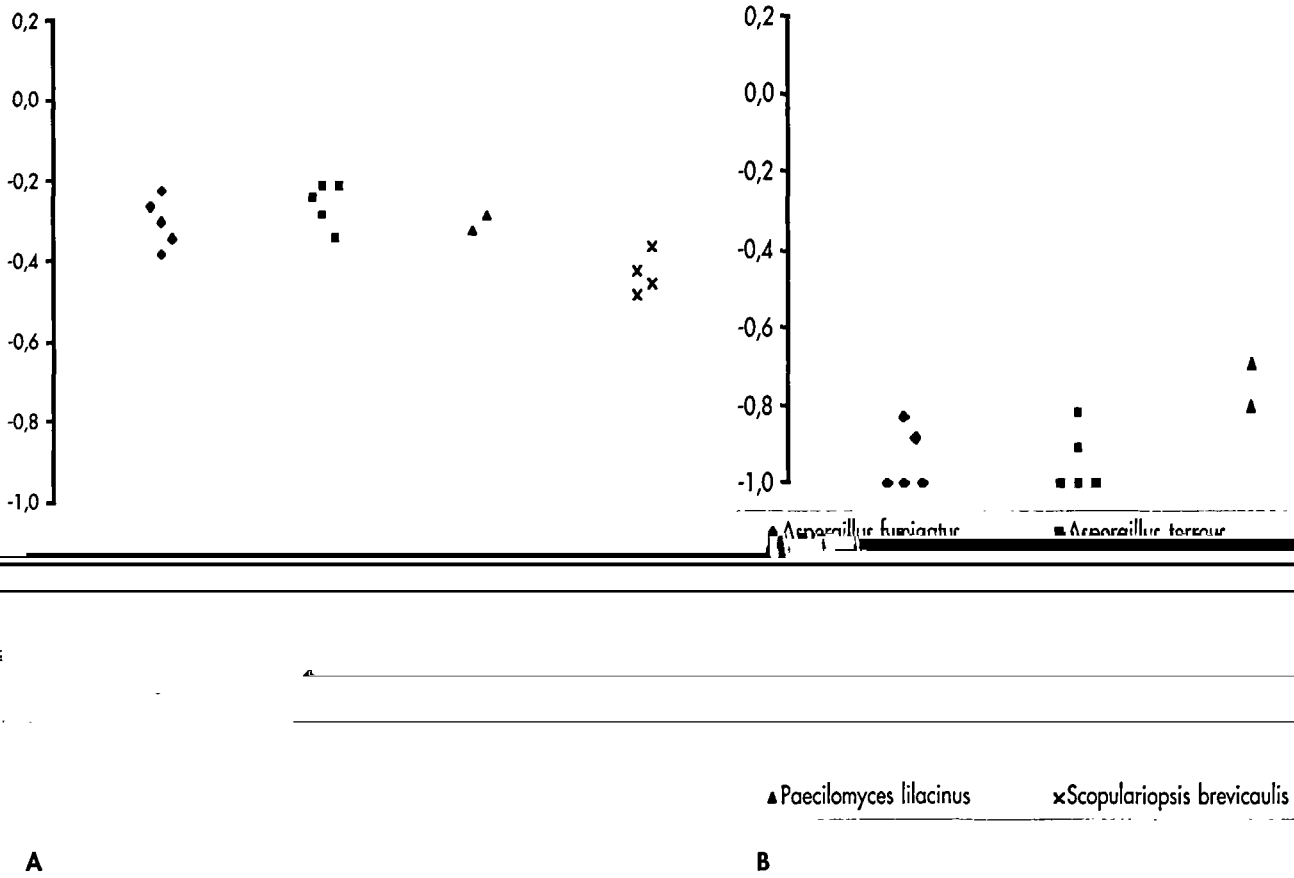


Figure 3. Distribution of I values for *Ruta* extract (A) and miconazole (B) against other hypomyces

Table 1. Distribution of I values for *Ruta* extract (A) and miconazole (B) against other hypomyces

Species	n°strains	-0.20 < I		-0.6 ≤ I ≤ -0.2		-1 ≤ I < -0.6	
		R	M	R	M	R	M
<i>Microsporum canis</i>	14	0	0	6	2	8	12
<i>Trichophyton mentagrophytes</i>	10	2	0	4	4	4	6
<i>Trichophyton rubrum</i>	8	1	0	6	0	1	8
<i>Aspergillus fumigatus</i>	5	0	0	5	0	0	5
<i>Aspergillus terreus</i>	5	0	0	5	0	0	5
<i>Paecilomyces lilacinus</i>	2	0	0	2	0	0	2
<i>Scopulariopsis brevicaulis</i>	4	0	0	4	1	0	3

R = *Ruta chalepensis* ethanol extract

M = Miconazole