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Shibanjan Paul Roy
M. Pharm, Department of Pharmacology, Freelancer Scientist Cum Freelancer Guide Cum Inventor, Jalpaiguri, West Bengal, India

Corresponding Author:
Shibanjan Paul Roy
M. Pharm, Department of Pharmacology, Freelancer Scientist Cum Freelancer Guide Cum Inventor, Jalpaiguri, West Bengal, India

Evaluation of antifungal activity of essential oil from *Chrysocoma ciliate* (Family-Asteraceae) leaves

Shibanjan Paul Roy

Abstract
Actually this plant *Chrysocoma ciliata* L. is an South African plant used for the treatment of pain, menstrual disorders and stomach disorders. In research the essential used in the concentration of 0.035 ml, 0.070 ml, 0.1 ml for the *Microsporum canis*, *Microsporum gypseum*, *Trichophyton tonsurans*, *Trichophyton rubrum* and *Sporothrix schenckii*. In this present research we found the phyto constituents like- torregol, valerenol, mintsulfide, torregol, N-hexanal, Germacrene D etc. available in this plant.

Keywords: Antifungal activity, essential oil, *Chrysocoma ciliate*

Introduction
Chrysocoma ciliata L. is a plant from South Africa it's native range is Mozambique to South Africa. This is used for the purpose of inhibition of *Microsporum canis* a very dangerous fungal infection by which dermatophytes occurs. It also infect the humans health. The soil associated dermatophyte is *Microsporum gypseum* infect the skin of mammals. It also causes the inflammatory activity of superficial dermatophytosisin the glabrous skin in humans. The *Trichophyton tonsurans* is a potent fungal infection belonging from family arthrodermataceae that causes ringworm infection of the scalp. The *Trichophyton rubrum* makes a shelter in the superficial layers of skin. *Sporothrix schenckii* also a fungal infection caused in skin. In the cutaneous skin sporotrichosis is usually a painless bump that develop any time from 1 to 12 weeks after exposure to the fungus.

Materials and Methods
Sample Collection and Processing
The plant *Chrysocoma ciliata* (Family-Asteraceae) was collected in Malbazar by lab. It was after identified. But this plant is came from South Africa. In this research first the plant leaves is dried under a shade by adjusting room temperature for 13days before distillation process. To a 2L conical flask waith a stopper after backed the plant materials of 205gm directly reduced reduced to a coarse powder form and with 700mL distilled water. The flask was connected by Clevenger apparatus. After boil it for 5h7min the flask contents were allowed to boil. The distilled essential oil by over anhydrous sodium sulfate of plant leaf extract collected and in a -20 °C freezer after it will be stored in a opaque glass vial.

Phytochemical Screening
The phytochemicals of the plant *Chrysocoma ciliata* Leaves were determined in accordance with the methods described by Harborne (1984) [272]. The colour intensity of essential oils of identification reactions allow a semi-quantitative evaluation of the presence of secondary metabolites.

Microbial Suspension
By Sauboraud Dextrose Agar (SDA) culture medium *Microsporum canis*, *Microsporum gypseum*, *Trichophyton tonsurans*, *Trichophyton rubrum*, and *Sporothrix schenckii* were maintained at 4 °C. On SDA slants the dermatophytes were sub-cultured and incubated at 36 °C for 8 to 15days, by depending on the microorganism. Aseptically the mycelia growth was scraped and suspended thoroughly in sterile distilled water. By spectrophotometrically the suspension was standardized to an absorbance of at 445nm. These suspensions approximately to 0.5 to 2.5×10^3 cells/ml and as inoculums were used for susceptility testing were used. (Chandrasekaran and Venkatesalu, 2004) [273].

Anti-fungal Assay

The essential oil of *Chrysocoma ciliata* Leaves of quantitative antifungal activity performed by using the agar well diffusion method. After PDA full form everyone know that Potato Dextrose Agar first autoclaved after 5ml poured into the each of the petri dishes, rotate and allowed to solidify. A portion of actively growing of *Microsporum canis*, *Microsporum gypseum*, *Trichophyton tonsurans*, *Trichophyton rubrum* and *Sporothrix schenckii* was cut out into another plate and by distilled water it will be diluted approximately 10^5 colony forming unit per millitre. By the inoculums 500 microlitres was spread over plates already solidified PDA and 5mm approximately was bored at the plates center. The essential oil concentrations of 0.035ml, 0.070ml and 0.1ml were added as appropriate were added to the wells. By the parafilm the plates were sealed and left for 33min at room temperature to allow the diffusion of the oil. After then the plates were incubated for 49hours at 26 °C, after the inhibition zone around the well obtained was measured. Without the oils the the controls plates were containing microorganisms. But Fluconazole (187.5µg) disks were used as Positive controls. Under aseptic condition the experiments were carried out triplicate.

Antifungal activity of the essential oil from the leaves of *Chrysocoma ciliata* (Family-Asteraceae)

Zone of Inhibition in (mm)

Concentration					
Positive Control	***M. canis***	***M. gypseum***	***T. tonsurans***	***T. rubrum***	***Sporothrix schenckii***
Fluconazole 187.5 µg	31±3.08	42 ±2.809	42.5 ±3.906	49.5 ±5.9	46.5 ±3.81
0.035ml	17.93±3.33	20.73 ±3.66	19.33 ±3.39	17.93 ±4.16	16.53 ±3.89
0.070ml	29.87 ±2.94	35.47 ±3.99	28.67 ±3.42	28.87 ±3.96	27.07 ±3.70
0.1ml	48.94 ±3.24	57.74 ±4.32	53.34 ±3.72	48.94 ±3.89	44.54 ±3.71

Fluconazole (187.5 µg) used as positive control

Results and Discussion

In this research about the essential oil of *Chrysocoma ciliata* leaves investigated their good antifungal effect against dermatophytes types fungi. In this research the MIC results given in the Table. The essential oil dosage used in this research as 0.035 ml, 0.070 ml, 0.1 ml.

Conclusion

The good result indicate that that the leaves of *Chrysocoma ciliata* consists more bioactive compounds for inhibition of dermatophytic compounds.

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