

Morphological Characterization of Homeopathic Medicinal Plants and Evaluation of their Biological Effect Against the *Microsporium canis*

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ABSTRACT

Objective: The aim of this study is to identify and characterize the homeopathic medicinal plants on the basis of their morphology and evaluation of their biological effect against the "*Microsporium canis*".
Materials and Methods: Taxonomic analyses (e.g., documentation of the biological origin and morphological characteristics) are essential for characterizing homeopathic drugs in a systematic manner to reach authentication, and thus maintaining homeopathic drug efficacy. The selected homeopathic medicinal plant drugs *Allium sativum* (Bulb), *Eucalyptus globulus* (Leaves), *Ficus religiosa* (Leaves), *Holarrhena antidysenterica* (Bark), *Ocimum sanctum* (whole plant) and *Terminalia chebula* (Fruit) were investigated morphologically including microscopical and quantitative micrometric analysis as per standard protocol. The mother tincture and potencies of homeopathic drugs were prepared as per standard HPI protocol and were evaluated for their biological activity against the *Microsporium canis* using agar disc diffusion assay as per guidelines of clinical and laboratory standard (M44-A) with slight modification. The diameters of zone (mm) of inhibition were measured, and the results were compared with the vehicle control followed by positive control Ketoconazole as reference standard fungicide. **Results:** Some peculiar characters in plants were observed like elongated or polyhedral cells followed by storage parenchymatous cells and poor vasculature in *Allium sativum*, secretory canal and curved eye shaped vascular bundle in *Eucalyptus globulus*, eye shaped vascular bundle in *Ficus religiosa*, hair pattern and quadrangular stem of *Ocimum sanctum*, rhomboidal prismatic crystals, laticifers and stone cells in *Holarrhena antidysenterica*. Mother tincture of *Terminalia chebula* was exhibited maximum zone of inhibition up to 13.6±1.1 mm followed by *Ocimum sanctum*, *Eucalyptus globulus*, *Allium sativum*, *Ficus religiosa* and *Holarrhena antidysenterica*. In case of potencies (3X, 6X and 12X), significant zone of inhibition was observed with many medicines especially *Allium sativum* at 6X (9.6±2.9 mm), *Ficus religiosa* at 3X (9.8±0.4) and 12X (9.2±1.1), *Ocimum sanctum* at 3X (9.8±1.3), 6X (11.6±1.7) and 12X (9.2±0.8), compared to vehicle control against *M canis*. These plants of medicinal importance were fully described macro- and micro-morphologically for easier and more accurate identification. **Conclusion:** The present study obtained results was that morpho-anatomical characters and biological activity not only provide characters for their correct taxonomic authentication, but also serve as standard data for the quality assessment of the pharmaceutical preparation of homeopathic drugs.

Keywords:

INTRODUCTION

Multiple approaches of taxonomical analysis (e.g., documentation of the biological origin and morphological characteristics) play important role for characterizing homeopathic drugs in a systematic manner to reach authentication and identification, for the aim to maintaining efficacy of any drug. It is commonly known that morphological data can be of dubious taxonomic reliability because of environmental interaction and the largely unknown mechanisms of genetic control of these traits^{1,2}. However, problems associated with the interpretation of morphological descriptions can be minimized by measuring traits in several environments or by limiting comparisons to those traits for which the

effects of environmental interaction are smallest. Besides, continued usage of morphological features to describe varieties indicates that these morphological markers retain popularity as descriptors.

Different plants and their parts have their own medicinal properties and are used extensively in indigenous, traditional and natural medicinal systems from ancient time. *Allium sativum* is used for the treatment of bronchitis, catarrhs, colic, constipation, cough, coxalgia³. Part of the plant having chemical defence system against insects is composed of volatiles and various allelo chemicals, such as mono terpenes, which have deterrent activity⁴. *Eucalyptus globulus* Labill belonging to family Myrtaceae also known as Blue Gum is used for the treatment of a

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