

THE ANTIMYCOTIC EFFECT OF SOME BEE PRODUCTS AND VEGETAL EXTRACTS ON GENUS *MALASSEZIA* FUNGI

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Abstract. For both antimicrobial and antimycotic therapy, the researches of the latest years are mentioning an increased resistance of the bacterial and fungal strains to these substances. A natural alternative to classical therapy was aimed, so 14 *Malassezia pachydermatis* strains isolated from dogs suffering with dermatitis and otitis in Cluj-Napoca were tested regarding the capacity of some bee products to inhibit their “in vitro” development. From the products tested, the best results were registered for propolis tincture, polioel 3 and royal jelly. The media of the diameter inhibit area in mm, was of 22,21 mm for propolis tincture, 14,92 mm for polioel 3 and respectively of 8,78 mm for royal jelly.

INTRODUCTION

The genus *Malassezia* is known to include eleven species of yeasts, many of which have been associated with various diseases worm blooded vertebrates. *Malassezia pachydermatis* is a lipophilic budding yeast that colonizes the skin and mucosal sites of healthy dogs (1,2). Despite being part of the normal cutaneous microflora, it is known that the yeast may become pathogen under certain circumstances (1,3). *Malassezia* dermatitis, an inflammatory dermatitis associated with elevated populations of *M. pachydermatis* on the skin of dogs, has been recognized with increased frequency (2,3).

The microscopic appearance of *Malassezia pachydermatis* is oval to peanut-shaped and is approximately 2-3 μm in width and 4-5 μm in length. Colonies are medium sized, round and convex shaped, white-yellow colored, developed on solid environments in 5-7 days. Reproduction is asexually achieved by unipolar or sympodial (*M. sympodialis*) budding (1,2).

Unlike many bacteria or other fungi, *Malassezia* yeasts are rarely found in the environment. Their habitat is primarily the skin and mucosa of mammals and birds. In healthy dogs, *M. pachydermatis* can be isolated from the ear channel, anus, rectum, oral cavity and, less commonly, the nose and vagina. On the normal canine skin, carriage of the yeast is most common in the interdigital areas and around the mouth but uncommon on the axilla or dorsum (2,3). In other species, *Malassezia* organisms have been recovered from the skin of healthy cats, ferrets, foxes, bears, pigs, horses, birds and rhinoceroses.

MATERIAL AND METHOD

The aim of the study was to test the efficiency of the alternative therapy using bee products and vegetal extracts in order to apply modern treatment solutions in diseases produced by yeasts from genus *Malassezia*.

The investigations took place during March-June 2007 within the Microbiology Laboratory of the Faculty of Veterinary Medicine Cluj-Napoca. The 14 *Malassezia pachydermatis* strains tested in the study were isolated from dogs suffering with otitis and dermatitis in Cluj-Napoca, within the Emergency Hospital and the Faculty Clinics. Each strain was initially suspended in Salina to a density of the first tube on McFarland scale, and a 9 cm Petri dish containing Sabouraud agar was flooded. The excess was removed and the agar surface dried. Buckets were performed, and the products to be tested were placed similar to the antibiograma model, numbering the place of the first product tested.

The products tested were the following:

Polioel 3 – bee growth stimulator,

Honey – a complex bee product containing water, glucides, pollen, vitamins, amino-acids, pigments, aromatic compounds, etc. It has specific part, with benefic activity in cardiac, respiratory, digestive, dermatomycoses, nervous diseases.

Propolis tincture – is a alcoholic propolis solution containing minimum 1% total flavoids. It has a wide spectrum due to the substances as balms, eteric oils, analgesic substances, enzymes. It is indicated as wound repairing and various dermatosis.

Propoderm cream - contains propolis extract, wax, lanolin, paraffin oil, being an homogeneous yellow-brown product. It is destined in healing body areas exposed to chemical products, sunray, wind, cold.

Apireven cream – containing propolis extract, paraffin oil capsici extract, camphor, methyl nycotinate and venom bee solution. It is recommended in maintaining comfort and muscular relaxation.

Maltonic – dietetic product based on pollen, dandelion and honey tincture. It is a liver protector and stimulant.

Royal jelly – it is secreted by the young bees and is destined to feed the queen and the larva. It has vitalizing effects, tonifying and regenerating, being easily assimilable.

After the products were placed, the plates were incubated for 5 days at 32°C.

RESULTS AND DISCUSSIONS

Bee products testing and their use into therapy is wider every year, and regarding their capacity to inhibit 14 *Malassezia* strains tested in the experiment, propolis tincture, polioel 3 and royal jelly proved to be efficient. The other products such as honey, propoderm, maltonic and apireven had no effect on the strains included in this study.

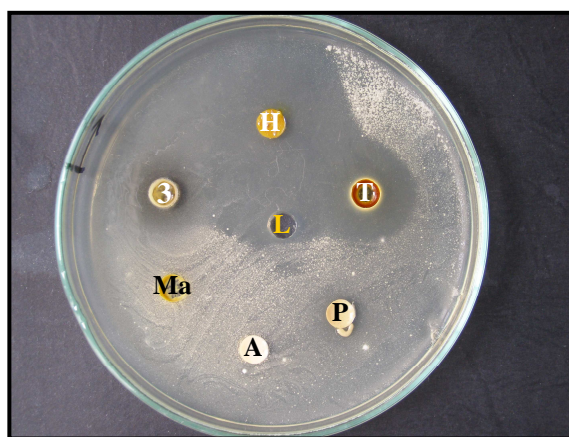
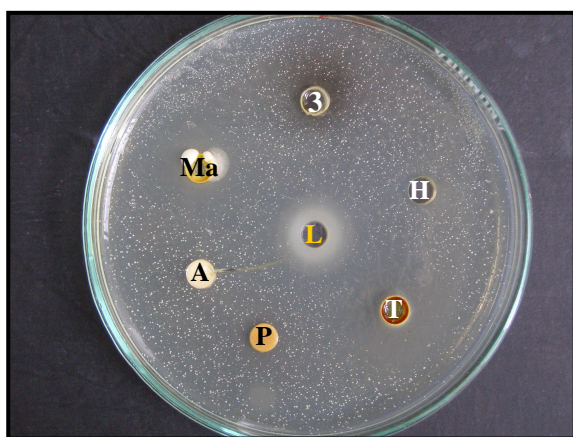


Fig. 1, The efficiency of the bee products on strain 27

Fig. 2, The efficiency of the bee products on strain 9

H – honey, T – propolis tincture, P – propoderm, A – apireven, Ma – maltonic, 3 – polioel 3, L – royal jelly

In fig. 1 and 2 is presented the efficiency of the bee products tested on *Malassezia pachydermatis* strains isolated from Cluj-Napoca.

In table 1 is presented the number of the strains tested in this study, the bee products used and the inhibition diameter area in mm for each strain and product.

Table 1

The results obtained at the bee products tests sensibility strains
(the values are representing inhibition area mm in diameter)

Bee products used	Strain number (bold) and inhibition diameter area in mm													
	4	7	9	10	11	12	15	17	18	20	21	25	26	27
Polioel 3	9	16	9	12	15	20	22	18	14	15	15	20	16	8
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Propolis tincture	19	23	21	22	21	25	24	25	26	21	19	20	24	21
Propoderm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apireven	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maltonic	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Royal jelly	7	9	12	6	8	8	6	9	10	11	12	8	9	8

The most efficient product proved to be the propolis tincture, but its action is mostly determined to the alcohol contained in the composition.

CONCLUSIONS

- The bee products tested in the experiment proved to be efficient in inhibiting the 14 *Malassezia pachydermatis* strains tested in the experiment, the best action being registered for propolis tincture, followed by polioel 3 and royal jelly.
- The media of the inhibition area diameter in mm for the 14 tested strains was of 22,21mm for propolis tincture, 14,92mm for polioel 3 and 8,78mm for royal jelly.

- The products honey, propoderm, apireven and maltonic had no efficiency on the strains tested in the experiment.

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