

A review of literature on: DERMATOPHYTES IN HUMAN AND ANIMALS

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RINGKASAN

Di Australia, telah diisolasi *Microsporium canis* dari kucing, anjing, kelinci, kuda, singa, domba dan manusia; *M. gypseum* dari hewan liar, tikus, kelinci, kelelawar, reptilia, anjing, babi, unta dan kuda; *M. nanum* dari babi dan manusia; *Epidermophyton floccosum* dari manusia; *Trichophyton mentagrophytes* dari marmot, kanguru, mencit, tikus, anjing, kuda, kelinci dan manusia; *T. equinum* dari kuda; *T. rubrum* dari manusia; *T. verrucosum* dari sapi, mencit dan manusia.

Di Indonesia, di daerah sekitar Medan, Bandung dan Jakarta, telah diisolasi *M. gypseum*, *E. floccosum*, *T. concentricum*, *T. rubrum*, *Candida albicans* dan *C. parapsilosis* dari manusia; *M. gypseum*, *T. terrestre* dan *C. keratinophilum* dari tanah.

Dari tinjauan pustaka ini, jelas bahwa informasi tentang dermatofitosis di Indonesia tidak atau kurang lengkap. Penelitian-penelitian lebih lanjut mengenai dermatofitosis di Indonesia perlu dilakukan mengingat bahwa kebanyakan dermatofitosis merupakan salah satu penyakit jamur yang dapat ditularkan dari hewan ke manusia atau sebaliknya (zoonosis).

INTRODUCTION

Relatively numerous data exist in the literature on the fungal diseases in many areas in the world, particularly in Australia. However, references to Indonesia are few, with one report of *Trichophyton violaceum*, *T. concentricum* and *Microsporium gypseum* in humans (Wassilew, 1976), and a reference to *M. gypseum* in soil (Susilo and Eng, 1967).

Records of human and animal dermatomycoses in Australia has been reported since 1891 (Dunne and Mary, 1965). A survey of zoophilic dermatophytoses isolated in the Perth area during 1970-1979 is presented. *Microsporium canis* was isolated from 353 cats and 43 dogs (McAleer, 1980c). Besides from the dogs and cats (Keep, 1959; Robert and Keep, 1965; McAleer, 1980 c), *M. canis* has also been isolated from the rabbits (Connole, 1963a), horses (Pascoe, 1976), lions (Hyne et al., 1969), Merino sheep (Robert and Keep, 1965) and humans (Hodges and Rao, 1965). A small group of young lions showed small, circular, localized areas of alopecia which was also reported to be *M. canis* (Hyne et al., 1969). In the sheep, the lesions were about 2cm

diam., with thickened skin covered with encrusted wool. Histological sections showed acute inflammation of the skin, cellular infiltration of the dermis, and serous exudation through the epidermis. Some wool fibers were infected with hyphae, and in an advanced stage disintegrated into fibrils which retained the Gram stain. It is believed that the *M. canis* infection originated from cats that went into the pens (Robert and Keep, 1965). In a survey of *M. canis* infection of cats in Sydney a total of 1,059 cats examined 5.9% were infected with *M. canis*. A considerable higher incidence was found among thoroughbred cats than among common cats. The highest incidence (12.6%) was found in kittens under 3 months old, and the peak month was April. In 50% of the cases transmission had occurred in humans, twice as many children as adults being affected (Keep, 1963). It was also reported that nine cases of *M. canis* developed in 2 families associated with a 7 week-old kitten (Hidges and Rao, 1965). A few cases of *M. canis* infection in urban areas of South Australia are due to infection from animals, this is probable more frequent in the country (Donald *et al.*, 1966). Kaminski and Green (1977) reported that the variant of *M. canis* was isolated from 21 brush samples of scalps of 83 children. There were diffuse or scattered fine white scaling lesions with minimal hair loss. This variant developed a small spidery colony with a central downy to powdery tuft, which in 5–6 days produced many typical macroconidia. Young cultures produced little or no pigment, but later developed a buff or pale brownish pigment. Four cats and 2 dogs at Maningrida were the reservoirs of this variant (Kaminski and Green, 1977).

M. cookei, recorded for the first time in Australia was isolated 6 times from 137 soil samples collected of various part of Queensland (Ridley and Mary, 1961). *M. cookei* has been observed in wild animals (Ridley and Mary, 1961), rats (Connole, 1963) and dogs (McAlear, 1980 b). *M. cookei* was isolated from soils in yards where wild animals were kept (Ridley and Mary, 1961; McAlear, 1980b) and also from human skin and the coats of several animal spp. (McAlear, 1980 c).

M. gypseum has been observed in wild animals (Ridley and Mary, 1961), rats (Connole, 1963 a), rodents, rabbits, marsupials, bats, reptiles and a monotreme (Rees, 1967), dogs (Wilkinson, 1979), pigs and camels (Donald *et al.*, 1966), and horses (Connole, 1967; Pascoe and Connole, 1974). *M. gypseum* is rare in South Australia but more common in New South Wales and Queensland (Donald *et al.*, 1966). Three dachshunds with multiple skin lesions over the whole of the body surface caused by *M. gypseum* have been reported. The lesions were raised plaques 1-3 cm diam., there was no hair loss or pruritus, and the lesions did not fluoresce (Keep and Pile, 1965). In the horses, Pascoe and Connole (1974) reported two outbreaks of *M. gypseum* infection (involving 8 yearlings in one stud and 10 pregnant mares in another). They found several isolated reports of *M. gypseum* from soil samples, a stud and from a clinically normal stallion in an adjacent yard. Moist atmospheric conditions and the presence of biting insects appeared to be factors in the spread and degree of infections in the 2 major outbreaks. Lesions were generally much smaller than those associated with *T. equinum* var. *autotrophicum* and showed less scab form-

ation and depilation. Treatment with thiabendazole and lime sulphur did not appear to reduce the clinical recovery time. Experimental *M. gypseum* infection of 34-yr-old thoroughbred race horses was attempted. All 265 infected sites showed some swelling and roughness at days 2-3 and 175 sites showed roughness with raised skin at days 6-10. This was followed by development of scabs which remained very small. New hair growth usually occurred at day 30.

M. nanum is the usual species infecting pigs is Queensland but 1 case of *Nannizzia gypsea* infection has been seen (Connole, 1977). Outbreaks of *M. nanum* infections in 3 pigs and humans in the Perth area were also recorded (McAlear, 1980c). The disease was the same as that reported in USA and occurred on large white pigs in 4 widely separated herds. In pathogenicity studies the 2 isolated tested produced lesions up to 12 cm in diameter. On experimental pigs these lesions regressed within a week (Connole, 1966). *M. nanum* was also isolated from a rash on the arm of a farmhand who worked in contact with pigs, cattle and poultry; from a rash on the leg of a woman; and from a lesion of a 10-yr-old boy who regularly visited a farm with pigs, cows and poultry (O'Keeffe, 1973).

All cases of trichophytosis encountered have been due to *T. mentagrophytes*, which is a common pathogen of animals in Australia (Donald *et al.*, 1966). At the Queensland Inst. Med. Res., Brisbane, from hairs of 90 wild animal isolations were made of *T. mentagrophytes*. *T. mentagrophytes* was also isolated from guinea pigs (McAlear, 1980c), kangaroos (McAlear, 1980c), mice (Donald and Geraldine, 1964), rats (Connole, 1963a), dogs (Connole, 1968), horses (McAlear, 1980c), rabbits (McAlear, 1980a) and humans (McAlear, 1980a). During a plague of mice in South Australia in 1962, studies at the Adelaide Children's Hospital and the Institute Medical and Veterinary Science indicated the presence of *T. mentagrophytes* var. *quinckeanum* (*T. quinckeanum*), and a variant of *T. mentagrophytes* producing a reddish purple pigment and resembling *T. rodens* described in 1917. It was concluded that sufficient difference exist between *T. quinckeanum* and *T. mentagrophytes* to maintain their separation as varieties (Donald and Geraldine, 1964). A widespread epizootic was reported due to a granular var. of *T. mentagrophytes* occurred in a new stock of laboratory guinea pigs. The infections spread quickly among them and also to rabbits and mice at the breeding station and to 4 people. Trunk or limbs were the areas most affected and young aboriginal males were affected more often than others. Areas subject to pressure from clothing were more liable to infection (Green and Kaminski, 1973). The infection was contracted either directly by handling animals or indirectly by fomites. The 4 humans were treated successfully with Castellani's paint (McAlear, 1980a). Ringworm due to *T. mentagrophytes* in a dog showed a lesion 4x3 cm in the left front paw, loss of hair and a little scaling but no irritation (Connole, 1968). Wilkinson (1979) reported that a 2-yr-old male silky terrier had a multiple infection with *M. gypseum*, *T. mentagrophytes* and *C. albicans*. As immunodepression was suspected, a course of levamisole and griseofulvin was prescribed. Bone marrow depression was countered with anabolic steroids and a vitamin-iron compound. A

10% w/v sol. of econisazole was applied topically to the lesions. Complete resolution of the infection was obtained after 5 months therapy (Wilkinson, 1979). On the other hand, Connole (1963b) reported that none of the persons handling the animals infested with *T. mentagrophytes* was infected, nor was the source of infection determined.

Green and Kaminski (1973) reported that dermatophytes isolated from the human skin aborigines were *T. rubrum*, *M. canis* (in a double infection with *T. rubrum*), *Epidermophyton floccosum* and *T. mentagrophytes var granulosum* (*T. mentagrophytes*).

It is noted that in Queensland, dermatomycosis of horses is usually caused by *T. equinum var. autotrophicum* or *M. gypseum*. Typing of strains of *M. gypseum* from horses revealed that 24 were *N. gypsea*, 1 was *N. incurvata* and 2 were *N. fulva*. *T. equinum var autotrophicum* was found to survive for up to 10 months on leather girth which had been used on an infected animal (Connole, 1977). *T. equinum var. autotrophicum* was restricted to racing horses (Pascoe, 1976).

McAleer (1980c) reported that *T. verrucosum* was isolated from 4 cows and 1 bull; all were single infections in dairy herds, and one was also obtained from a laboratory mouse. Human infections with *T. verrucosum* was recorded during the period.

The incidence of *T. terrestre* in skin scraping was studied over 7 years. Results showed that in the cow and the horse the presence of a ringworm-like condition is associated with an increased incidence of *T. terrestre* (Connole, 1977).

Rees (1967) reported that keratinophilic fungi were isolated from 147 (52.7%) of the 279 animals (rodents, rabbits, marsupials, bats, reptiles and a monotreme) examined, and included *Arthroderma curreyi* (61 isolates), *A. cuniculi* (30), *A. tuberculatum* (8), *N. cajetani* (52), *M. gypseum* (6), *Chrysosporium spp.* (31), *Gymnoascus reesii* (6), *Ctenomyces serratus* (3), *T. ajelloi* (1), and miscellaneous fungi (6). All 36 bats, 5 *Mus musculus*, and the 1 monotreme examined were negative. The species isolated from reptiles were *A. cuniculi*, *N. cajetani* and *Chrysosporium sp.*

An unpublished report of dermatophytoses isolated from 17 human cases in the Dermatology Clinic, Medical School, Department, University of North Sumatra, Medan, Indonesia by Hutapea and Beneke (1969a), the following were isolated: *T. rubrum* (7), *E. floccosum* (4), *T. concentricum* (2), *C. albicans* (5) and *C. parapsilosis* (3). The types of infections seen in the males and females patients were essentially alike with the exception of two patients. Dermatophytes found from soil around the vicinity of Medan, Indonesia were *M. gypseum*, *T. terrestre* and *Chrysosporium keratinophilum*. The perfect stage, *N. incurvata*, was found growing on hair in two soil

samples. It is concluded that in Indonesia, *T. terrestre*, *N. incurvata* and *C. keratinophilum* are apparently reported for the first time (Hutapea and Beneke, 1969b). *M. gypseum* was also isolated from soil in Jakarta (Susilo and Eng, 1967), and from humans in Bandung, Indonesia (Wassilew, 1976). *T. violaceum* and *T. concentricum* were also reported in humans (Wassilew, 1976).

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