

2. Title: Ecologic study of pathogenic fungi in Thailand

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The ecologic studies of pathogenic fungi in Thailand have centered around the study of soil, which frequently serves as the reservoir for human infections, and attempts to detect naturally acquired mycoses among the rodent population. Examination of soils for pathogenic fungi is a technique frequently used to establish the endemicity of an area or to determine a focus of infection.

Soil collections have been made from several area of Thailand including the north, norseast, central, southeast and southern provinces. Collections were made from ecologic sites similar to those known to harbour Histoplasma capsulatum or Cryptococcus neoformans in other parts of the world. A total of 84 soil samples have been processed for recovery of pathogenic fungi using animal inoculation, direct culture, and sterilized human "hair-baiting" techniques. Mouse inoculation failed to recover H. capsulatum from any of these specimens including those collected in caves and therefore enriched with bat guano. Failure to recover H. capsulatum from soil is not unexpected and corroborates the low endemicity indicated by the histoplasmin skin test survey. Much of the soil processing for H. capsulatum was conducted concurrent with the histoplasmin survey and deemphasized when the results of both studies showed a low incidence of this organism in Thailand.

Selected soil samples were collected recently from caves on islands off the coast of southern Thailand. These caves are famous for the bird nests used in the preparation of "birds nest" soup. Arrangements were made through the Bureau of Inland Revenue to have the contractor collect swallow droppings from the floor of these caves and 12 samples were obtained from 12 different islands. As per prior agreement these samples were shipped for processing to Dr. Libero Ajello, Communicable Disease Center, Atlanta, Georgia. Results from these specimens, collected from an area in Thailand with the greatest percentage of histoplasmin reactors, are pending.

Since cryptococcosis is an important systemic mycosis in Thailand, 23 soil samples contaminated with pigeon or cuckoo droppings were collected specifically for recovery of Cryptococcus neoformans. The initial recovery of C. neoformans, from natural substrates in Thailand, was accomplished by this laboratory early in 1966. C. neoformans was isolated from an abandoned pigeon nest, as well as soil containing pigeon droppings, collected in Udornthani (northeast Thailand). Additional isolations of C. neoformans have been made from similar specimens collected in Bangkok and Chanthaburi (southeast). Soils collected near Bangkok's main railroad station, and others from within one-half block from the SEATO Medical Research Laboratory yielded C. neoformans. The ecologic habitat of the three isolates from Chanthaburi differed in the fact that two were from unadulterated pigeon droppings and the third was recovered from cuckoo droppings collected from the floor of the cage.

These isolations confirm C. neoformans to be a cosmopolitan fungus and explains the reason cryptococcosis is one of the important systemic mycotic diseases in Thailand.

Fifty-eight of the eighty-four soil samples were also processed using a human hair-baiting technique for isolation of keratinophilic fungi. Microsporium gypseum was recovered from four samples and Trichophyton terrestre from thirty-seven samples using this technique. The importance of M. gypseum as an etiologic agent for diseases of the skin and hair is well known, however, the significance of T. terrestre is doubtful since it is currently throught to be a non-pathogen for humans. A previous study (Taylor, R.L., Occurrence of Microsporium gypseum in Thailand Soils. Mycologic LVIII; 1966) showed M. gypseum to be present in 39.3% of 140 soil samples collected in 70 of the 71 provinces. Recovery of M. gypseum from soil collected in 41 provinces demonstrated the wide distribution of this organism throughout Thailand. The much lower recovery rate of M. gypseum from samples collected from caves and pigeon habitats is undoubtedly a reflection of sampling from ecologic situations unfavorable for propagation of M. gypseum.

Additional Soil collections are not contemplated.