INTERRELATIONSHIPS BETWEEN PHLEBOTOMINE SANDFLIES, DIFFERENT ANIMAL RESERVOIR HOSTS AND *LEISHMANIA* PARASITES IN SINAI

A Thesis

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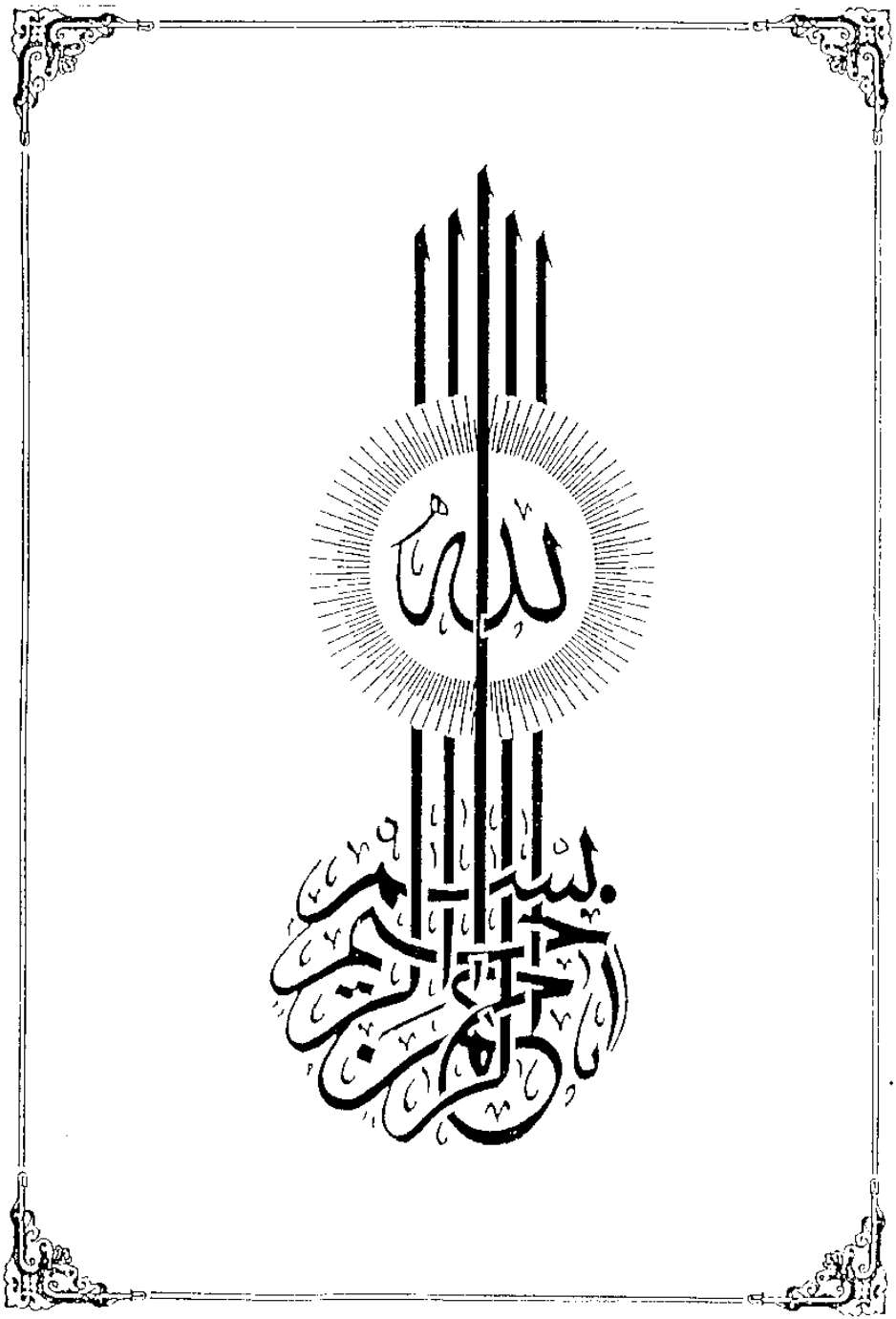

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In Egypt, endogenous and exogenous cases of human cutaneous leishmaniasis (C.L) have been reported in the Nile Delta, Suez Canal Zone, and Sinai **(Khalil, 1934, Soliman and Abou-Shady, 1981, and Morsy et al., 1982).**

No doubt, human cases are increasing **(Morsy et al., 1985).** This is especially true, when the animal reservoir, and the insect vector, sandfly are numerous.

Nowadays, Sinai is an important and interesting center for visitors and workers. Besides, it is an essential cross road from many countries. So, with the reconstruction of Sinai and the movement of temporary workers and visitors to the neighbouring countries where the disease is endemic, cases are markedly increasing. Different species of sandfly now been recorded in Sinai **(El-Sawaf et al., 1987),** so there is a more or less close fit between- *Leishmania* strains and the sandflies. Consequently, it is essential to study the distribution, behaviour and susceptibility of different species of sand flies to *Leishmania* parasite and to prove or to incriminate the insect vector.

The visceral *(V.L.)* and cutaneous forms *(ACL* & ZCL**)* of leishmaniasis are more or less encountered in the Middle East and the Mediterranean basin. The visceral is more or less dangerous as it may be fatal. On the other hand multiple lesions of cutaneous leishmaniasis, cause disfiguring. Dogs are playing an important role as reservoir for V.L, and rodents are considered to be the reservoir host for the C.L. In the old world, sandflies of the genus *Phlebotomus* are the incriminated vectors **(Adler, 1964).**

So, the main objective of this work, was to study the interrelationships between phlebotomine sandflies, different animal reservoir hosts, and *Leishmania* parasite in Sinai.

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* ACL : Anthroponotic Cutaneous Leishmaniasis

** ZCL : Zoontic Cutaneous Leishmaniasis

LITERATURE REVIEW

1. SYSTEMATIC POSITION AND HISTORICAL BACKGROUND OF *LEISHMANIA*

A.Systematic Position Of *Leishmania*

Kingdom:	*Protista*
Sub-kingdom:	*Protozoa*
Phylum:	*Sarcomastigophora*
Sub-phylum:	*Mastigophora.*
Class :	*Zoomastigophorea.*
Order:	*Kinetoplastida*
Sub-order :	*Trypanosomatina.*
Family :	*Trypanosomatidae*
Genus :	*Leishmania*

The genus *Leishmania* is defined as a protozoan parasite of the order *Kinetoplastida*, family *Trypanosomatidae* digenetic *(Heteroxenous)*, with promastigotes and paramastigotes (Single free flagellum) in the alimentary tract of the insect host, and rounded amastigotes (no free flagellum) living and dividing in the macrophage cells of the vertebrate hosts. As far as is known, invertebrate hosts are limited to species of the blood sucking phlebotomine sandflies (Diptera: *Psychodidae,. Phlebotominae)* and the vertebrate hosts to a variety of mammals, including man.

There is unknown sexual cycle and multiplication in both the invertebrate and the vertebrate host is by binary fission. Transmission among the mammalian hosts is predominantly by the bite of the infected insect. Distribution throughout most of tropical and subtropical America, Africa, and parts of eastern Asia (but unknown in Australia), in central Asia, the Mediterranean basin and some European countries was reported. **(Lainson & Shaw, 1987).**

B.Historical Background

Visceral leishmaniasis was known in India long before any clue was obtained as to the cause of the highly lethal kala azar and, in the Mediterranean region, a similarly fatal disease was referred to by early clinicians as infantile, or infectious splenic anaemia. When **Cunningham (1885),** saw (amastigotes) *Leishmania* in sections of human skin lesions from patients with Delhi-Boil, he felt that the organism was possibly a member of the Mycetozoa, or (Slime fungi). Their protozoal nature was first recognized by a Russian army physician. **Borovsky (1898),** when he studied similar skin lesions (sort sore) in Turkmenistan, he made no attempt, however, to identify the organism further.

Leishman (1903), discovered similar intracellular bodies in the viscera of fatal cases of Kala- azar from India, and recognized them as morphologically related to trypanosomes.

Donovan, had also made similar observations on Indian patients in 1903.

Laveran and Mesril (1903), thought that the parasite associated with Indian kala-azar was a *Piroplasma* and named it *Piroplasma donovani* a name quickly amended to *Leishmania donovani* by **Ross in 1903.**

Cutaneous leishmaniasis were recorded in India, Russia, Egypt, Italy and Tunisia. It was inevitable that there was much discussion as to the possibility of a multiplicity of *Leishmania* species causing both the visceral and cutaneous forms of the disease because of the extraordinarily wide geographical area involved. In 1908 for example, **Nicolle,** felt that epidemiological and clinical features of Mediterranean visceral leishmaniasis were so different from those of Indian Kala-azar that they warranted a different name for the Mediterranean parasite, which he named *Leishmania infantum* (because of the highly frequency of the disease in very young children). This name variously used at specific or sub-specific level, is still in use today, by **Nicolle.** Other proposal that the parasite of old world cutaneous leishmaniasis should be called *L. wright*, was unacceptable one to prior use of the name *L. tropica.*