



**MORPHOLOGY AND PROTEIN PROFILES OF
SALIVARY GLANDS OF FEMALE SAND FLIES,
PHLEBOTOMUS PAPTASI AND *PHLEBOTOMUS
LANGERONI***

A thesis submitted to the Department of Entomology, Faculty of
Science, Ain Shams University

In partial fulfillment of the requirements for the award of the M.Sc.
degree in Entomology

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This thesis is dedicated to my mother for her encouragement, inspiration and love devoted to me

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ABSTRACT

Sand fly saliva plays an important role in transmission of leishmaniasis and it has the exhibition of immunomodulatory activities by suppressing the host immune response. In this study morphology and protein profiles of salivary glands of the female *Phelebotomus papatasi* from Sinai and Alexandria and *Phelebotomus langeroni* from Alexandria were analyzed. These sand flies are the vectors of cutaneous leishmaniasis and visceral leishmaniasis, respectively. The results showed that the salivary glands consists of two sac-like lobes, two central salivary ducts and common salivary duct. In *P. papatasi* (Sinai and Alex) the two lobes are different in size; the right lobe is larger than the left lobe. while in *P. langeroni* the two lobes are identical in size. The size of the salivary glands varied according to the physiological states during female maturation. In both species, the salivary gland protein contents is correlated with size of the salivary gland and the age of the female. Analysis of the salivary gland homogenates proteins by SDS-PAGE showed 15 protein bands in *P. papatasi* (Sinai) of 9.61-77.55 KDa in (SGHs), whereas 5 protein bands were disappeared after feeding. Also 15 protein bands detected in *P. papatasi* (Alex) from 4.91-77.55 KDa and 6 protein bands disappeared at the other physiological states after feeding. While in *P. langeroni* 12 protein bands detected with mol. wt 9.25-63.37 KDa without any change during the other physiological states. The differences of electrophoretic protein profiles of the female salivary glands in each population, suggesting that protein profiles might be useful for construction of an additional tool to distinguish these sand fly species. The information obtained from this study is an initial step that provided basic information for further study on salivary gland proteins and genes that might be used to distinguish these phlebotomine species and strains. Also, it may support further studies on salivary molecules that may involve blood feeding, host immunity, and parasite transmission.

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LIST OF ABBREVIATIONS

Ae.	: <i>Aedes</i> .
AMAX	: Absorbance maximum.
An.	: <i>Anopheles</i> .
BA	: Brazilian states of Bahia
Bi	: N, N-methylebisacrylamide.
BSA	: Bovine serum albumin.
Cm	: Centimeter.
CSD	: Common salivary duct.
Cu.	: <i>Culex</i> .
D1	: 1- day old.
D2	: 2- day old.
D3	: 3- day old.
D7	: 7- days old.
DL	: Distal lobe.
Gm	: gram.
KDa	: Kilo Dalton(s).
LL	: Left lobe.
Lu.	: <i>Lutzomyia</i>
M	: Mean.
μA	: Microampere.
μg	: Microgram.
MG	: Minas Gerais.
Min	: minute (s).
μl	: Microliter.
MI	: millimeter.
ML	: Medial lobe.
μm	: Micrometer.
Mm	: millimeter.
Mol. Wt.	: Molecular weight.
N	: Number of test replicates.
Nm	: Nanometer.
OD	: Optical density.

PBS	: Phosphate buffered saline.
PL	: Proximal lobe.
P.	: <i>Phlebotomus</i> .
RH	: Relative humidity.
RL	: Big lobe.
RTC	: The research and training center.
S.	: <i>Simulium</i> .
SC	: Santa Catarina.
SD	: Standard deviation.
Sd	: Salivary duct.
SDS	: Sodium dodecyle sulfate
SDS- PAGE	: Sodium dodecyle sulfate- polyacrylamide gel electrophoresis.
SGHs	: Salivary gland homogenate (s).
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SP	: Salivary pump.
TEMED	: N,N,N',N'- Tetramethylethylenediamine.
WHO	: The World Health Organization

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