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**A PRELIMINARY STUDY ON THE SALIVARY GLANDS OF
HAEMATOBIA EXIGUA DE MEIJERE 1903
(DIPTERA: MUSCIDAE)**

A PROJECT REPORT PRESENTED

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A preliminary study on the salivary glands of *Haematobia exigua* de meijere 1903 (Diptera: Muscidae)

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ABSTRACT

Haematobia exigua de Meijere (1903), commonly referred to as the buffalo fly is a hematophagous fly found in cattle and buffaloes in Sri Lanka. Heavy infestations of flies on the host, results in poor weight gain and reduced milk yield. As a result livestock farmers face severe economic losses. The fly is commonly found in the intermediate and dry zone. So far there are no reports from elevations higher than 6000 ft above sea level.

The buffalo fly is an obligatory bloodsucker. Apart from causing direct effects due to blood loss, it also introduces pharmacologically active substance into its host during feeding. This could affect the general physiology of the host animal as well. Therefore, studies on the salivary glands are important in understanding the effects of the fly on the host. This investigates the morphology, histology and proteins of salivary gland.

The adult flies were collected from Nikawaratiya and Kekirawa farms during the period, November and December 1998. Gross morphology of the salivary glands (n = 10) was studied using wet mount preparations of dissected specimens. Glands (n = 10) were measured



using camera lucida attachment and micrometer. Histological studies were carried out on Bouin's fixed specimens that were sectioned and stained with Azan stain. Extracts of salivary gland (7.5 μg) were subjected to SDS PAGE and western blot analysis for immunological studies.

The salivary gland of the fly consisted of four parts namely, paired long tubular secretory part, salivary ducts arising from each secretory part, the common duct and the salivary pump. The proximal end of the glandular region is narrower than that of distal end. Glands ran along the esophagus up to 2nd segment of the abdomen. Measurements of the different parts of the glandular regions were, Length, 1.53 ± 0.12 mm, width at proximal end, middle and the distal end 42.5 ± 3.5 μm , 46.2 ± 2.5 μm , 55.5 ± 4 μm respectively. The tubular gland consisted of a single layer of cuboidal cells lying on the basement membrane. Azan staining revealed a yellow coloration within the cells and blue in the lumen suggesting the differences in the chemical nature of the respective secretions within the cell and the lumen of the gland. Yellow coloration of the gland was attributed to the activity of the gland. Lumen of the gland stained blue indicating presence of mucin in the saliva. Several protein bands were observed at the SDS PAGE. The western blot analysis of the same separation detected two bands that were immuno-reactive. A single cross-reacting band was also observed indicating the shared nature of arthropod salivary antigens.