RESUMO - ECTOPARASITOS: SISTEMÁTICA, EPIDEMIOLOGIA E CONTROLE

IMPACT OF DIFFERENT DIETS ON THE BIOLOGY OF STOMOXYS CALCITRANS

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Stomoxys calcitrans is a hematophagous ectoparasitic fly that has gained attention due to the increase in population outbreaks intensified by sugarcane activities in the Southeast and Central-West regions of Brazil. This species primarily affects horses and cattle, causing significant impacts on the livestock activity, as its bites lead to reduced weight gain in cattle and decreased milk production. Additionally, the stable fly, as it is commonly known, contributes to the epidemiology of various diseases, as it can participate in the mechanical transmission of several pathogens. In its natural habitat, the insect can feed on various animal species blood, demonstrating non-specificity regarding the blood it consumes. However, the blood of different species has its own nutritional

composition, which can impact the life of this arthropod in various ways. Thus, this study aims to analyze the impact of feeding on blood from different species (bovine, equine, ovine, rabbit, and human) and a 10% sucrose solution on the biology of S. calcitrans. Flies of both sexes, in equal proportions, were divided into groups that received different diets (15 males and 15 females per group). Each group was monitored daily for mortality, feeding changes, and egg counting when present. About 100 eggs from each group were deposited in suitable substrate for development and were monitored daily until the emergence of adults, recording the time until hatching, time until pupation, pupal weight, time until adult emergence, and adult weight. After six days of feeding on each type of diet, females had their ovaries dissected, measured, and photographed under a stereomicroscope. Feeding on a 10% sucrose solution, human blood, equine blood, and rabbit blood resulted in a reduced average survival of the flies (6, 5, 6, and 8 days, respectively) compared to those fed on bovine and ovine blood (14 and 18 days, respectively). As expected, females fed with the 10% sucrose solution did not lay eggs. About 90% of females fed on human blood and 83% fed on rabbit blood died before oviposition began, leading to a reduced number of eggs laid (36 and 58 eggs, respectively). In contrast, feeding on equine blood resulted in 53% mortality before oviposition, producing 391 eggs, while ovine and bovine blood had only 10% and 20% mortality, respectively, leading to a total production of 2465 and 1329 eggs. Feeding on ovine and bovine blood led to earlier oviposition, occurring on the 6th and 8th days of feeding, respectively, while groups fed equine, rabbit, and human blood took longer to lay eggs (12, 13, and 15 days, respectively). These data were corroborated by observing ovarian development after six days of feeding, where females fed ovine and bovine blood demonstrated faster organ development compared to other diets. The analyses of immature stage development did not show differences between dietary groups. Furthermore, thin-layer chromatography (TLC) experiments are underway to investigate the absorption of different lipids (triacylglycerol, cholesterol, and cholesteryl esters) by the fat body, guts and ovaries in each dietary group. Thus, we concluded that feeding on blood from different hosts distinctly affects the survival and reproduction of S. calcitrans, with ovine blood leading to the highest survival and egg production, while human blood showed the worst results for these evaluations.

Palavras-chave: survival; reproduction; development; different blood sources.