RESUMO SIMPLES - OUTRAS ÁREAS TEMÁTICAS

BIONOMIC AND PHYSIOLOGICAL IMPACTS OF DIFFERENT BLOOD DIETS IN STOMOXYS CALCITRANS

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The study of ectoparasites that cause losses to livestock production has strong relevance in the country. Among the models investigated, the fly Stomoxys calcitrans has gained prominence due to increasing population outbreaks in the Southeast and Central-West regions. Since cattle parasitized by this species exhibit reduced weight gain and milk production as a result of the attacks, establishing control strategies for the insect, in addition to ensuring animal welfare, impacts food security, reinforcing the importance of research on this organism. Such research requires the rearing of these insects in the laboratory, making the development of strategies that increase colony productivity highly valuable. In this regard, although the main issue is associated with cattle, the fly can parasitize various domestic and wild mammalian hosts, raising the question of how consuming blood from different species affects its biology. In this context, the present study uses different dietary sources (bovine, equine, ovine, rabbit, and human blood, as well as a 10% sucrose solution) to assess their impacts on the bionomic and physiological aspects of the fly. Regarding the

feeding sources, the bovine blood used was obtained from an authorized slaughterhouse, and the other samples were kindly provided by the Oswaldo Cruz Foundation (Fiocruz). To evaluate the effects of these diets, a longevity assay was first carried out, in which each group—containing 15 males and 15 females—was fed daily with one of the food sources until the death of the last individual. This analysis revealed that feeding on ovine and bovine blood resulted in the highest mean longevity (18 and 14 days, respectively), whereas rabbit blood showed an intermediate value (9 days), and equine (5 days) and human (6 days) blood led to reduced mean survival, similar to feeding on sucrose solution (6 days). The groups that received ovine and bovine blood also showed an increase in the number of eggs laid per female (257 and 232, respectively) compared with equine (84), rabbit (43), and human blood (11), with this experiment performed under the same conditions as the previous one Additionally, analysis of dissected ovaries revealed that flies fed for six days on ovine and bovine blood exhibited greater ovarian development relative to the other diets. This was supported by higher triacylglycerol (TAG) and protein accumulation in the ovaries of the ovine group, followed by the bovine group, for the same feeding period. Under the same conditions, the equine and rabbit groups showed intermediate development, while human blood and sucrose resulted in the poorest development. Feeding for six days on ovine blood led to greater TAG storage in the midgut, followed by the bovine group, in both sexes, with both groups also showing the highest protein levels in the organ. In contrast, females fed ovine blood for six days had a 4.5-fold increase, and males a 2-fold increase, in TAG content in the fat body—the main lipid storage site—compared with the group fed bovine blood. To date, it can be concluded that ovine and bovine blood diets stand out from the others by providing adequate nutritional support to ensure higher survival and reproduction among the tested groups. However, the biochemical analyses conducted suggest that the ovine blood diet promotes superior performance in TAG storage.

Palavras-chave: lipid metabolism; longevity; ovarian development.