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LIVE INSECT LARVAE AS ENVIRONMENTAL ENRICHMENT IN MUSCOVY DUCK: EFFECTS ON WELFARE AND BLOOD TRAITS

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Introduction. Interdisciplinary approach is necessary to evaluate animal welfare, since it comprehends animals' good health, comfort, and expression of their natural behaviors [1]. Aim of the present work is the evaluation of the effects of Hermetia illucens (HI) and Tenebrio molitor (TM) live larvae as environmental enrichment in Muscovy ducks on behavioral patterns and blood parameters. Material and methods. Three-day-old females Muscovy ducklings were allotted in 18 pens (6 replicate/treatment, 7 birds/pen) and assigned to 3 experimental treatments. The C group (control) was fed with commercial feed, while HI and TM groups where fed with commercial feed supplemented with HI and TM live larvae (provided as 5% of expected daily feed intake), respectively. Video recordings were made on 3 replicate/treatment every week during the trial and were performed in 3 periods during the day: the hour before insects' larvae provision (T1, 9.00-10.00am), the hour during the larvae provision (T2, 10.00-11.00am), and the hour after larvae provision (T3, 11.00-12.00am). At the end of the trial, blood samples were collected from 12 birds/treatments in EDTA tubes and in serum-separating tubes. The total red and white blood cell counts, serum protein, lipid, minerals, liver and renal function serum enzymes were evaluated. One-way ANCOVA was used to compare the observed behaviors in the experimental treatments using the week as a covariate, while one-way ANOVA was used to analyze the collected data for blood traits ($P<0.05$). Results. During T2 and T3 the birds of the C group showed higher time spent in stand position compared to the HI and TM groups ($P<0.05$). Moreover, during T3 the HI group showed lower time spent in walking activity compared to the C group ($P<0.05$). The overall blood traits were not affected by the experimental treatments ($P>0.05$) except for the H/L ratio that resulted lower in the insects fed groups compared to the control ($P<0.05$). Conclusion. The behavioral patterns observed were only slightly affected by the daily provision of live HI and TM larvae. However, the observed reduction of the H/L ratio results to be promising in terms of the improvement of animal welfare due to the dietary administration of live insect larvae.