

## Oral Supplementation of Sweet Orange Extract “Citrus Sinensis” as Substitute for Synthetic Vitamin C on Transported Pullets in Humid Tropics

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**Abstract :** Food animals reared for meat require transportation during their life cycle. The transportation procedures could initiate stressors capable of disrupting the physiological homeostasis. Such stressors associated with transportation may include; loading and unloading, crowding, environmental temperature, fear, vehicle motion/vibration, feed / water deprivation, and length of travel. This may cause oxidative stress and damage to excess free radicals or reactive oxygen species (ROS). In recent years, the application of natural products as a substitute for synthetic electrolytes and tranquilizers as anti-stress agents during the transportation is yet under investigation. Sweet orange, a predominant fruit in humid tropics, has been reported to have a good content of vitamin C (Ascorbic acid). Vitamin C, which is an active ingredient in orange juice, plays a major role in the biosynthesis of Corticosterone, a hormone that enhances energy supply during transportation and heat stress. Ninety-six, 15weeks, Isa brown pullets were allotted to four (4) oral treatments; sterile water (T1), synthetic vit C (T2), 30ml orange/liter of water (T3), 50ml orange/1 liter (T4). Physiological parameters; body temperature (BTC), rectal temperature (RTC), respiratory rate (RR), and panting rate (PR) were measured pre and post-transportation. The birds were transported with a specialized vehicle for a distance of 50km at a speed of 60 km/hr. The average environmental THI and within the vehicle was 81.8 and 74.6, respectively, and the average wind speed was 11km/hr. Treatments and periods had a significant ( $p>0.05$ ) effect on all the physiological parameters investigated. Birds on T1 are significantly ( $p<0.05$ ) different as compared to T2, T3, and T4. Values recorded post-transportation are significantly ( $p<0.05$ ) higher as compared to pre-transportation for all parameters. In conclusion, this study showed that transportation as a stressor can affect the physiological homeostasis of pullets. Oral supplementation of electrolytes or tranquilizers is essential as an anti-stress during transportation. The application of the organic product in form of sweet orange could serve as a suitable alternative for the synthetic vitamin C.

**Keywords :** physiological, pullets, sweet orange, transportation stress, and vitamin C

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