

Project Title: **Housing system affects stress and fear reactions, and meat quality of broiler chickens subjected to road transportation.**

Name of Project Leader : Zulkifli Idrus

Name of Project Members : Abdulaziz Al-Aqil, Abdul Rahman Omar, Awis Qurni Sazili, Mohd. Ali Rajion

Department of Animal Science  
Faculty of Agriculture  
Universiti Putra Malaysia, 43400 UPM,  
Serdang, Selangor, Malaysia

Tel : 03- 89466908

E-mail : [zulkifli@agri.upm.edu.my](mailto:zulkifli@agri.upm.edu.my)

Category :Fundamental

Cluster : Agriculture

A study was conducted to determine the effects of housing system on heat shock protein (hsp) 70 density, blood parameters (plasma corticosterone concentration, heterophil / lymphocyte ratios, serum creatine kinase activity), fear-related behaviour (duration of tonic immobility) and meat quality in broiler chickens subjected to various duration of road transportation. On day 1, equal number of broiler chicks were equally assigned either to an environmentally controlled house (ambient temperature was set at 32 C and gradually reduced to 23 C by day 21) or a conventional open-sided house (cyclic temperature). On day 42 at 20:00 h, the birds were caught, crated and transported in an open truck for 2, 4 or 6 h. Following transportation, birds that were raised in an open-sided house had significantly smaller increases in plasma corticosterone concentration and heterophil / lymphocyte ratios and shorter tonic immobility duration than their closed house counterparts suggesting that the latter were more stressful and fearful. The improved ability of chicks raised in an open-sided house to cope with the physiological and physical stresses of road transportation could be attributed to enhanced hsp 70 reaction. It can be concluded that birds with a better ability to express hsp 70 were more tolerant to the stress of handling and transportation. As measured by muscle glycogen and serum creatine kinase activity, the meat quality of birds reared in open-sided house was better than those under the closed-house system. Raising broiler chickens in closed-house system is recommended in Malaysia due to the hot and humid climate. However, based on the present findings it appears that the birds are more susceptible to the stresses associated with catching, crating and transportation and the quality of their meat may be adversely affected. Hence, careful attention must be paid to the handling and transportation procedures of chickens raised under closed house system.