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A study on life cycles of three Calliphorid fly species, *Chrysomya megacephala, Lucilia sericata* and *Lucilia cuprina* for the estimation of post mortem interval

S. P. Zambare*, H. M. Pawar, G. D. Khedkar

Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad. M.S. India.

Calliphorid flies are the first to attack corpse, lay eggs on the openings and develops the evidence for medicolegal investigations. However, their use has been limited due to lack of species-wise thermo-biological profiles. In this investigation, duration of life stages of three Calliphorid fly species, *Chrysomya megacephala*, *Lucilia sericata* and *L. cuprina*, were determined in winter, summer and rainy seasons.

At first, Calliphorid flies were reared on the putrefied liver mixed with meat in cages under laboratory conditions. Identification of the flies was confirmed using taxonomic keys. Fly species were released separately in cages and allowed to lay eggs on the fresh liver-meat mixture. When maggots hatched, they were fed with the same mixture until the pre-pupal stage. The fully developed maggots stop feeding and moved to dry soil provided in the cages for pupation. The pupae were allowed to develop into adults in the same cages. Durations of life stages, temperature and humidity during the experimental period relating to three seasons were recorded.

The days required to complete the life cycle in summer, rainy and winter seasons for *C. megacephala, L. sericata* and *L. cuprina*, were 10, 14, 16, 9, 13 and 14 and 9, 14, 15, respectively. One day was required for the development of egg and Istinstar for all the species. A major difference was observed in pupation period during the three seasons. Warmer climate accelerated the rate of development. Temperature plays an important role in the development of these fly species. Hence, thermo-biological profiles are needed to be developed for different species of Calliphorid flies for accurate PMI determination.

Keywords: Calliphoridae, Forensic, Post mortem interval

*sureshchandraz@yahoo.co.in