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Decomposition and insect succession on Guinea pig (*Cavia porcellus*) carcass

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Carrion insects visit the carcass in a predictable order depending on different decomposition stages of the carcass, which is referred to as insect succession. The position and the placement of the carcass affect the rate of decomposition and the pattern of insect succession. Our objective is to study the differences in the rate of decomposition and insect succession patterns between the carcasses of a hanging and a ground laying guinea pig. Two six months old, 500 g weighing male guinea pigs (*Cavia porcellus*) were sacrificed in identical method. One (C1) was kept in a hanging position, 1.5 m above the ground of the outside insectary and the other (C2) was kept on the ground 100 m away from the insectary. All the environmental parameters are similar except for the shade of the roof for the hanging carcass. Morphological changes in the decomposing carcasses were carefully noted and insects visited the carcasses were collected twice a day, at 9.30 am and 5.30 pm from the day of death on 30th October 2020, till the carcasses were fully decomposed. Collected insects were preserved and identified at the laboratory. Five different stages of corpse decomposition, including fresh, bloat, decay, post-decay, and skeletal stage, were distinguished, and the times required for each stage were recorded. The decomposition rate was higher in ground-laying carcass when compared with hanging carcass. A total of 13 species of insects representing 8 families of 4 orders such as Diptera, Coleoptera, Hymenoptera and Dermaptera were collected from C1, hanged inside the outdoor insectary and 27 species belong to 15 families of the same orders were collected from C2 on open ground. The insect succession on both C1 and C2 guinea pig carcass throughout the decomposition stages showed a similar pattern as *Musca domestica* was the first visitor at the fresh stage followed by *Chrysomya megacephala* and *Chrysomya rufifacies* (Diptera) at their bloat stage. Coleopterans reach the carcass at decay and post decay stages. But their arrival times were varied. C2 quickly changed into the next decomposition stage and completed the process, reaching the skeletal stage in 31 days, but C1 took 7 more days to complete. *Dermestes maculatus* is the one and only representative of Coleoptera for C1, but 07 species belong to 6 families found to be associated with C2. Differences in decomposition rates between hanging and ground laying carcasses could be caused by the differences in drying and availability of ground-dwelling taxa.

Keywords: *Carrion insects, Insect succession, Carcass, Decomposition.*