

9. Fleas

9.1 The squirrel flea *Ceratophyllus sciurorum sciurorum*

9.1.1 Circadian rhythms

The behavioural studies carried out in collaboration with the University of Leicester (Dr. Frank Clark, Dr. Derek Deadman and Stephen Pudney) and the University of Loughborough (Dr. Malcolm T. Greenwood) continued in 1997. We have looked at the effects of feeding on the circadian rhythms in the squirrel flea *Ceratophyllus sciurorum sciurorum*. Circadian rhythm in newly emerged fed individuals of this flea species was studied in a constant environment, using an insect activity monitor. The results of the trials run continuously over 7 days confirmed the finding of Clark *et al.* (1997) that *Ceratophyllus s. sciurorum* has a self-sustaining clock. Significance tests confirm that feeding weakens the rhythm but does not eliminate it. Although there was no significant difference in the mean amount of activity between the fed and the unfed fleas, there was a difference in the number of hours, over which the activity took place.

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9.2 The cat flea *Ctenocephalides felis*

9.2.1 Control of artificial cat flea infestation on cats with Program Vet[®] (lufenuron) and CGA 246'916

The purpose of the study was to evaluate the efficacy of an orally administered adulticide (CGA 246'916, nitenpyram) in cats treated with Program Vet[®] (lufenuron) for control of the cat flea *Ctenocephalides felis*. The effect of this treatment was compared by observing cats given either a Program Vet[®] or a CGA 246'916 treatment only or no treatment (control). The products were tested on flea-infested cats kept in laboratory cages.

A higher level of egg hatching and fleas reaching adulthood was observed immediately after administration of Program Vet[®] in the group of cats treated with CGA 246'916 and Program Vet[®] (group 2), compared to the cats given Program Vet[®] only (group 1). However, full control was

obtained after two days which is the normal period for lufenuron to be fully absorbed by the cats.

The Program Vet[®] treatment of the cats (group 1) gave 98-100 per cent control of the development of the eggs into adult fleas. This level of efficacy was observed from 2 days to 30 days after the products were administered.

An immediate and complete effect of the CGA 246'916 was observed after each treatment of the flea-infested cats (groups 2 and 3). The number of eggs produced decreased immediately. Further, no fleas were found in these two groups when the cats were combed at the end of the trial. This showed that the decrease of egg production was due to the adulticide activity of CGA 246'916 and not an effect on egg production. The persistence of the treatment is less than five days as flea reinfestations of the cats were successful five days after the weekly treatments.

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