

VARIATIONS AND SEXUAL DIFFERENCES IN THE SPECTRAL SENSITIVITY OF THE COMPOUND EYE OF THE HOUSEFLY *MUSCA DOMESTICA* (L.) AND THE LESSER HOUSEFLY *FANNIA CANICULARIS* (L.).

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The house-fly *Musca domestica* and the lesser house-fly *Fannia canicularis* are model candidates as transmitters of human and animal diseases because of their inclination to feed and breed in areas where food for human consumption is prepared.

At present, control of house-flies in food production, preparation, storage, and sales areas is generally by means of electronic fly killers (EFKs) which employ fluorescent bulbs emitting light in the near ultra-violet (UV) range. Their ability to attract flies is based upon the phototactic response of many Diptera to monochromatic UV light at 365 nm. For various reasons such as competing light sources and odours, EFK's capture only a small proportion of the exposed fly population.

In electrophysiological studies by means of recording electroretinograms (ERGs) we have shown that both *M. domestica* and *F. canicularis* possess, within the compound eyes, regions of differing spectral sensitivity. Both species exhibit the typical dipteran spectral sensitivity of a peak in the ultra-violet at around 350 nm, a peak in the blue-green from 450-550 nm, and a peak in the red at 630 nm. In general, it was found that in passing from the dorsal region, through the equatorial region and into the ventral region of the eye, sensitivity in the blue-green decreased relative to that in the UV. The shape of the spectral sensitivity curve differed between sexes. Males of both species are more sensitive in the blue and green than females relative to the UV peak, whilst females' sensitivity to overall light was 3-4 times that of males.

The overall sensitivity of the eye to light progressively increased passing across the eye from the dorsal, through the equatorial to the ventral region.

The increased blue sensitivity of the male eye may have a role in sexual behaviour, giving the male the ability to distinguish potential mates against skylight. The increased general sensitivity of the ventral eye region in both sexes is possibly related to the detection of contrasts between those surfaces reflecting or not reflecting UV.

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