EFFECT OF POTASSIUM CYANIDE ON THE WHITE CHROMATOPHORES OF THE CRAB, *GELASIMUS ANNULIPES*

THE mechanism of response of the vertebrate chromatophores has been studied in recent years by several investigators (Waring, 1963). However, there is practically no information regarding the energy requirements or the metabolic reactions following pigment movement in the chromatophores of the crustaceans. In the present investigation, the effect of potassium cyanide, a respiratory inhibitor, on the white chromatophores of the crab, *Gelasimus annulipes*, was studied.

Gelasimus annulipes are collected from the vellar estuary near the marine biological station, Porto Novo. Soon after bringing the crabs to the laboratory they

were cleaned and kept in fresh sea water for 24 hours before using them for experimentation. In all the experiments the extracts were assayed by perfusion through isolated legs removed from crabs adapted to black background. In the black adapted forms, the white chromatophores are in a semidispersed condition (Nagabushnam and Ranga Rao, 1967). Legs were removed from the crab by pinching the basiischium. The dactylus was then cut off to allow the perfusion fluid to flow through the legs. From each crab the first three pairs of walking legs were used in the experiments. The legs removed from one side of the animal were used in the experimental group while the legs of the opposite side served as the control group. The effect of KCN on the white pigment activity of the eyestalk extract was investigated as follows.

The eyestalk were removed from 15 crabs and divided into two groups of 15 each. One group of 15 eyestalks were extracted in sea water (control) while the other remaining eyestalks were extracted with sea water containing 10^{-3} M KCN. These two portions were assayed separately on isolated legs of crabs. Each leg received an injection of 0.05 ml. of the extract. The white chromatophores were

TABLE I

Effect of KCN on the white pigment dispersing activity of the eyestalk extract of Gelasimus

Time of observation in minutes	*Chromatophore stage*	
	Eyestalk extract treated with KCN (Experiment)	Eyestalk extract in sea water (control)
0 (Before injection) ..	3.0	3.2
15 (After injection) ..	3.0	5.0
30 ,, ..	3.0	5.0
45 ,, ..	3.0	4.5
60 ,, ..	3.0	4.0

staged at 15 minute intervals for one hour according to the system of Hogben and Slome (1931). The experiment was repeated once and the results are shown in Table I. From the table it is seen that the presence of KCN has inhibited the action of eyestalk hormone on the white chromatophores. From this experiment it may be inferred that KCN might have prevented the hormone to act on the white chromatophores. Lerner and Takahashi (1956) using the isolated skin of frog, studied the effect of melanophore dispersing hormone on the melanophores ; they poisoned the cytochrome oxidase system with carbon monoxide and found that in the presence of this poison the melanophore dispersing hormone action in dispersing melanin was inhibited. The failure of the white chromatophores of *Gelasimus* to respond to the eyestalk hormone may be due to active inhibition of respiration by KCN and hence energy may be used for the dispersion of granules in the white chromatophores.

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