PREFACE
Environmental lability imposes considerable stress on the inhabiting organisms. Temperature is such an lability environmental factor, known to play a vital role in influencing the metabolism, activity and even the distribution of animals (Precht et al. 1973). As such, ability to adapt to the inevitable thermolability in the environment confers on the animals a considerable survival advantage especially in such poikilotherms that inhabit environments characterized by wide fluctuations in thermal environment.

The earlier view has been that poikilothermic animals remain subsurvient to their environment, since their activity and indeed their continued survival is, at all times subjected to the prevailing environmental temperature. However, of late, it has unequivocally been established that, at least, most poikilotherms, more or less like homeotherms, posses the ability to regulate their metabolism against the ambient thermal variations. If the metabolism rise up to dangerously high levels with rising temperature or drop down to depressingly low levels with falling temperatures, even the existence of the poikilotherm is threatened. It is thus of considerable physiological importance that most poikilotherms, more or less like homeotherms have developed, although in a restricted sense, a fairly good degree of independence in their metabolism and activity from the ambient

A close perusal of the literature reveals that even though extensive work has been done on thermal acclimation of poikilotherms, very little is known about the mechanisms by which the animals adapt. In crustaceans eyestalk hormones are reported to regulate a number of physiological processes like moulting, osmoregulation, reproduction and metabolism (Heit and Fingerman, 1973; 1975; Raghavaiah, 1977; Reddy, 1981, Reddy et al. 1984; Reddy and Ramamurthi, 1987) and it is possible that regulation of these processes during acclimation is also by hormones (Saroja, 1962; Vijayalakshmi, 1964; Silverthorn, 1973; 1975a, b; Ivanovic et al. 1975 a,b, 1978, 1980, 1982, 1985; Kulkarni and Kamath, 1983; Charmantier et al. 1984 a, b).

Thus there appears to be a major investigative gap in the knowledge of temperature compensation of poikilotherms. Therefore a detailed study to understand the physiological adaptations of poikilotherms to thermal fluctuations appears to be highly essential to fill this investigative gap. Another important aspect is that, despite of good deal of knowledge on metabolic adaptation to thermal stress, almost all the work is
confined to marine and terrestrial animals and much attention was not paid to describe the physiological state of fresh water animal upon complete acclimation to temperature.

So it is highly commendable to bridge these investigative lacunae so as to understand the intricacies of thermal acclimation of these poikilothersms.

Rayalaseema a drought prone region, is characterized by low water and high temperature for most of the year. Therefore an attempt to understand the temperature compensation in poikilothersms of this region is especially ideal. As a typical representative of fresh water poikilothersms, the crab, Oziotelphusa senex senex (Fabricius) was selected. The choice of the problem has been particularly stimulated by the plentiful availability of the crabs in Tirupati throughout the year and also because of ease with which they can be maintained for long periods in the laboratory.

Though voluminous data are available on the temperature organism interaction, the role of neuroendocrine factors in regulating these physiological changes is yet to be elucidated in detail. So in the present piece of work attention has been paid to conduct some preliminary studies on the role of eyestalk
extracts in regulating respiration, energy metabolism and hydromineral balance in a fresh water field crab, O. senex senex acclimated to cold and warm temperatures.