Colony-bred Swiss albino rats (150 ± 10 gm) were divided into four groups. They were maintained under uniform husbandry conditions throughout the experimental period. First, second and third groups of rats were administered subcutaneously 100 μg/100 gm body weight 'Serpasil' (Ciba) daily for 6, 12 and 18 days respectively. Fourth group was injected with the vehicle (distilled water) only and treated as control. Animals were killed by decapitation after 48 h of last injection. Brain was divided into four parts, *i.e.*, cerebrum, midbrain, cerebellum and medulla oblongata. Method of Fiske and Subba Row[6] (Cited by Hawk *et al.*,[7]) was adopted for the estimation of acid and alkaline phosphatases. The results were statistically analysed using student '*t*' test.

The levels of acid and alkaline phosphatases in the control and treated rats are shown in Table I. In control group the amount of phosphatases is highest in the midbrain and lowest in the cerebellum, however, other parts of the brain also exhibit appreciable amounts of these enzymes. Administration of reserpine for short duration (1–6 days) results in a significant depletion of phosphatases activity in the midbrain ($P < 0.01$, $P < 0.001$) while in other parts of the brain the enzyme activity especially alkaline phosphatase increases significantly ($P < 0.001$). It is also observed that by increasing the duration of the drug (1–12 and 1–18 days) the acid phosphatase activity in all the parts of the brain increases while alkaline phosphatase activity decreases.

Brodie and Shore[5] studied the action of reserpine on the release of 5-hydroxy tryptamine in free form from depot in the brain and also considered it to be a possible central parasympathetic transmitter. Pletscher *et al.*[8], observed that reserpine caused a severe loss of 5-HT from the hypothalamus. Plummer *et al.*[9], suggested that reserpine inhibit certain hypothalamic centres and therefore, might have wide spread actions mediated through the endocrine system. It may be for this reason that the acid and alkaline phosphatases which are hormonal dependent are greatly influenced[10]. The restoration of phosphatase activity after prolonged administration of the drug reflects upon the adaptibility of the nervous tissue.

School of Studies in Zoology, Jiwaji University, Gwalior 474 002, India,
B. L. Yadav.
R. B. Gupta.
R. Mathur.

June 14, 1979.

1. Hertz, L., In *The Biological Basis of Medicine*, Ed. Bittar, E. E. and Bittar, N. Academic Press, London, New York, 1969, 5, 3.
2. Danielli, J. E., *Nature* (*Lond.*), 1951, 168, 464.
3. —, *Symp. Soc. Exp. Biol.*, 1952, 6, 1.
4. Lessin, A. W. and Parkes, M. W., *Brit. J. Pharmacol.*, 1959, 14, 108.
5. Brodie, B. B. and Shore, P. A., *Ann. N.Y. Acad. Sci.*, 1957, 66, 631.
6. Fiske, C. H. and Subba Row, Y., *J. Biol. Chem.*, 1925, 66, 375.
7. Hawk, P. B., Oser, B. L. and Summerson, W. H., *Practical Physiological Chemistry*, McGraw–Hill Co., New York, 1954.
8. Pletscher, A., Shore, P. A. and Brodie, B. B., *J. Pharmacol. Exp. Ther.*, 1956, 116, 84.
9. Plummer, A. J., Earl, A., Schneider, J., Trapold, J. and Barrett, W., *Ann. N.Y. Acad. Sci.*, 1954, 59, 8.
10. Rudel, H. W. and Kincl, F. A., *Pharmacology of the Endocrine System and Related Drugs : Progesterone, Progestational Drugs and Antifertility Agents*, Ed. Tausk, M., Pergamon Press, Oxford, 1972, 2, 420.

A PERFUSION FLUID FOR THE FRESHWATER CRAB, *BARYTELPHUSA GUERINI* MILEN EDWARDS

Physiological salines with necessary ionic concentration and osmotic pressure are widely used for allowing the cells to survive in them without damage[1]. A number of physiological salines or 'Ringer' solutions are available for different animals including crustaceans[2,3]. However, such perfusion fluids are not available for many freshwater crustaceans. It is assumed that either Van Harreveld's[4] or Prosser's[5] saline for *Cambarus* would prove satisfactory for most freshwater crustaceans if the total concentration is adjusted to isotonicity with the blood of the experimental species[2].

During the course of studies on the freshwater crab, *Barytelphusa guerini*, it was found that both Van Harreveld's and Prosser's salines were not satisfactory for this animal as the heart beat in *in situ* preparations stopped within 30–45 min and preparation of a new perfusion fluid suitable for this crab was necessary. The concentration of individual ions in the blood determined earlier[6,7] was as follows (mM/litre) = sodium—406·30, potassium—5·59; calcium—3·07; magnesium—0·84, chloride—200·14; sulphate—10·74, phosphate—0·22 and pH—7·70. A perfusion fluid of the following composition was prepared based on this blood composition,

Sodium chloride	..	16·09 g
Potassium chloride	..	0·4157 g
Calcium chloride	..	0·3402 g
Magnesium chloride	..	0·0803 g
Sodium sulphate	..	1·5261 g
Sodium bicarbonate	..	0·2800 g
Glucose	..	0·6000 g
Distilled water	..	1000 ml
pH	..	7·7

Sodium bicarbonate was added to the solution in order to raise the pH approximately to that of blood and since it would also prolong the heart beat in addition to buffering the medium[8]. *Tris* buffer of pH 7·7[9] was finally added in desired quantities (25–30 ml) for final adjustment and maintenance of the pH of the saline. Sufficient amounts of glucose were added to provide the respiratory substrate.

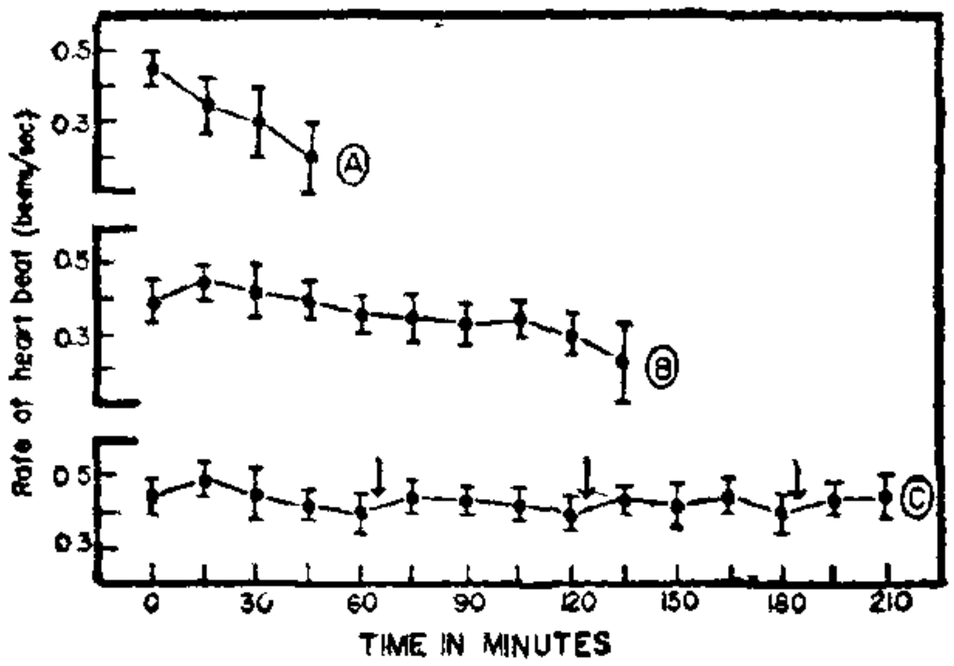

FIG. 1. Rate of heart beat in the crab determined in Van Harreveld's fluid (A), in the new perfusion fluid (B) and in the new perfusion fluid with frequent changing of the medium (C). Arrows indicate the time of changing the medium.

The suitability of the saline was tested experimentally as follows: The heart of the crab was carefully exposed by cutting the dorsal carapace laterally and removing the flap. It was maintained in the new saline (temp. 26–28° C) and the rate of heart beat (beats/sec.) was determined at regular intervals by noting down the time taken for 10 heart beast. It was found that the heart beats were steady and regular and the rate of heart beat remained constant over a long period. The preparation was viable for 2–3 hrs and the viability could also be prolonged further by changing the perfusion fluid at regular intervals. In contrast, the rate of heart beat in other salines was unsteady and irregular leading to a great variation in the rate and also the preparation did not last for more than 30–45 min (Fig. 1). In view of this it was concluded that the present fluid is most suitable for the crab, *B. guerini*.

Department of Zoology, S. A. T. VENKATACHARI.
Yeshwant Mahavidyalaya,
Nanded, Maharashtra 431 602,
May 5, 1979.

1. Willmer, E. N., *Tissue Culture*, Methuen, London, 1954.
2. Lockwood, A. P. M., *Comp. Biochem. Physiol.*, 1961, **2**, 241.
3. Prosser, C. L., *Comparative Animal Physiology*, W. B. Saunders Co., Philadelphia, 1975.
4. Van Harreveld, A., *Proc. Soc. Exp. Biol. New York*, 1936, **34**, 428.
5. Prosser, C. L., *J. Cell. Comp. Physiol.*, 1940, **15**, 55.
6. Ambore, N. E., *Ph.D. Thesis of Marathwada University*, Aurangabad, 1976.
7. Venkatachari, S. A. T. and Ambore, N. E., *All India Symp. on Comparative Animal Physiology*, Dharwar, Nov. 16–18, 1977.
8. Ringer, S., *J. Physiol.*, 1883, **4**, 222.
9. Colowick, S. P. and Kaplan, N. O., *Methods in Enzymology*, Academic Press, Inc., New York, 1955, **1**, 143.

AWARD OF RESEARCH DEGREES

The M.S. University of Baroda, has awarded the Ph.D. degree in Microbiology to Shri Abhya Meghasyam Dandekar; Ph.D. degree in Chemistry to Shri Sanatkumar Ochhavlal Parikh; Ph.D. degree in Psychology to the following: Shri Sarabantha Pramool, Smt. Mary Josephine Louis; Shri Gordhandas Vithaldas Mahant, Shri Chandravad dan Jethalal Purani; Smt. Rama Mathew, Shri Dinkerrai Gulabbhai Naik, Shri S. Purushothaman, Sister Marier De Sales A.C.

The M.S. University of Baroda, has awarded the Ph.D. degree in Archaeology to Shri Gunvhatrai Jagdishbahai Desai, Smt. Phasook Tulavardhana.

The M.S. University of Baroda, has awarded the Ph.D. degree in Geology to Shri Krishna Kumar Verma, Shri Sharadchandra Gordhanbahai Pate,- Shri Umesh Behari Mathur, Kumari Geeta Kanali lal Desai, Shri Pankak Kikubhai Patel, Shri Ganesh Trimbak Malpathak.

The M.S. University of Baroda, has awarded the Ph.D. degree in Physics to Kumari Charusheela Trimbak Acharya; Ph.D. degree in Biochemistry to Shri Appian Subramoniam N.

The M.S. University of Baroda, has awarded the Ph.D. degree in Chemistry to Shri Navinchandra Kasturchand Chudgar; Ph.D. degree in Zoology to Kumari Devhuti Mukundray Vyas, Kumari Naina Fatehchand Gangaramani.