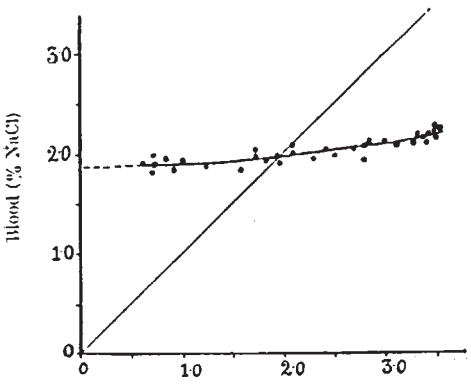


Relation between the osmotic pressure of blood and the external medium of *Palæmonetes varians*.

Values in per cent sodium chloride. Abscissæ, sea water; ordinates, blood. Straight line indicates where points would fall if blood and medium were isotonic.

for blood from 2·0 to about 1·8 per cent, but the blood always retains a higher osmotic pressure than the external medium, and variations are confined to the above limits. Dilute sea water equivalent to 0·6 per cent sodium chloride was approximately the lowest survival limit for the species in mixtures made with Plymouth tap water.

The homoiosmotic behaviour of the species is clearly indicated by the figures given above, the difference between the highest and lowest values for blood being only about 0·5 per cent sodium chloride for a corresponding difference of 2·9 per cent sodium chloride in the external medium. As compared with typical freshwater Crustacea[3,4,5] the blood of *Palæmonetes* is found to have a much higher osmotic pressure. It is all the more interesting because this property of maintaining hypotonicity in concentrated and hypertonicity in dilute sea water is known only in a few euryhaline crabs[6,7,8]. It would seem that this physiological character of *Palæmonetes varians* will to a great extent explain its peculiar habits and distribution.

Details of experiments will appear elsewhere.

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## Amylase in Amphioxus

Specimens of *Amphioxus caribbaeum* collected while working at the Tortugas Laboratory of the Carnegie Institution of Washington were examined with respect to the amylase present in the gut. Determinations were carried out by the micro-method of Linderstrom-Lang and Holter as modified by Holter and Doyle[1]. The intestine was divided into three regions, namely, hepatic cæcum, proximal intestine and lower intestine. The gut was split open, washed, and the area of each piece measured. When examined for amylase activity, the relative activities per unit area were found to be: cæcum, 62; proximal intestine, 41; lower intestine, 30.

In a determination of the relation of amylase activity to *p*H, the region of the junction of intestine, cæcum and pharynx was used. The final reaction mixture was 2 per cent glycerine, *M*/50 Sørensen phosphate buffer, 1 per cent soluble starch and 1 per thousand sodium chloride. The reaction time was 8–12 hours at 32·2° C. Taking the amylase activity at *p*H 7·0 equal to 100, the relation to *p*H is as shown in the accompanying table, with an optimum at *p*H 7·0. The values given are each averages of six determinations.

| *p*H | Relative activity |
|---|---|
| 6·5 | 75 ± 4 |
| 7·0 | 100 |
| 7·5 | 74 ± 3 |
| 8·0 | 69 ± 1 |

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## Cytochrome Oxidase in Tea Fermentation

An endo-enzyme system in tea leaf which could oxidize tea tannins directly was recently reported by Sreerangachar[1]. The enzyme remained bound to the tissue after exhaustive washing with water or phosphates of acetone-dried tea leaf tissue. Attempts to confirm this work in Assam at first proved fruitless. An enzyme preparation made apparently in identically the same way was completely devoid of oxidase activity. Tea tannin was not oxidized and no characteristic colour with the Nadi reagent was observed in the absence of hydrogen peroxide. An orange coloration developed in the fibrous portions of the leaf but this was found to be due to the interaction of the lignins with *p*-phenylene diamine. The endo-enzyme, however, showed strong peroxidase activity when hydrogen peroxide was added.

Some Ceylon leaf preserved under acetone which was sent to Tocklai still showed strong peroxidase activity, but no catechol oxidase activity could be detected.

On the other hand, it was shown at St. Coombs that the endo-enzyme could oxidize both tea tannins and catechol directly without the addition of hydrogen peroxide.

We believe the failure to confirm Sreerangachar's findings at Tocklai to be due to the higher temperatures prevailing in Assam. When green tea leaf is treated with alcohol at a laboratory temperature of 30° C. a crude enzyme preparation results with little or no oxidase but high peroxidase activity. If special precautions are taken to keep everything as cool as possible during the treatment of the tissue with alcohol, the enzyme preparation can bring about the oxidation of tea tannins and catechol without the addition of hydrogen peroxide. Treatment with alcohol at the higher temperature has obviously inactivated an enzyme which is essential for the direct oxidation of tea tannins.