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A HAEMATOLOGICAL STUDY ON THE FRESH-WATER TELEOST, *CATLA CATLA*

THE fresh-water fishes, *C. catla*, were collected from the tanks of the Government Fish Farm, Cuttack, and the blood samples were collected according to the method adopted by Quayyum and Naseem[6].

The haemoglobin concentration (Hb conc.) in *C. catla* ranged from 7·2 to 11·0 gm per 100 ml of blood with an average of 9·14 gm/100 ml. The mean Hb conc. was higher in males (9·4 gm) than in females (8·9 gm) (Table I).

The clotting time of *C. catla* varies from 44 to 68 secs with an average of 53·5 secs.

The total number of R.B.C. in *C. catla* varied from 1·76 to 2·89 million/cmm with an average of 2·28 million. The R.B.C. count was higher in males (2·41 million) than in females (2·18 million).

The erythrocytes are elliptical in shape with centrally located nucleus (Fig. 1). The average

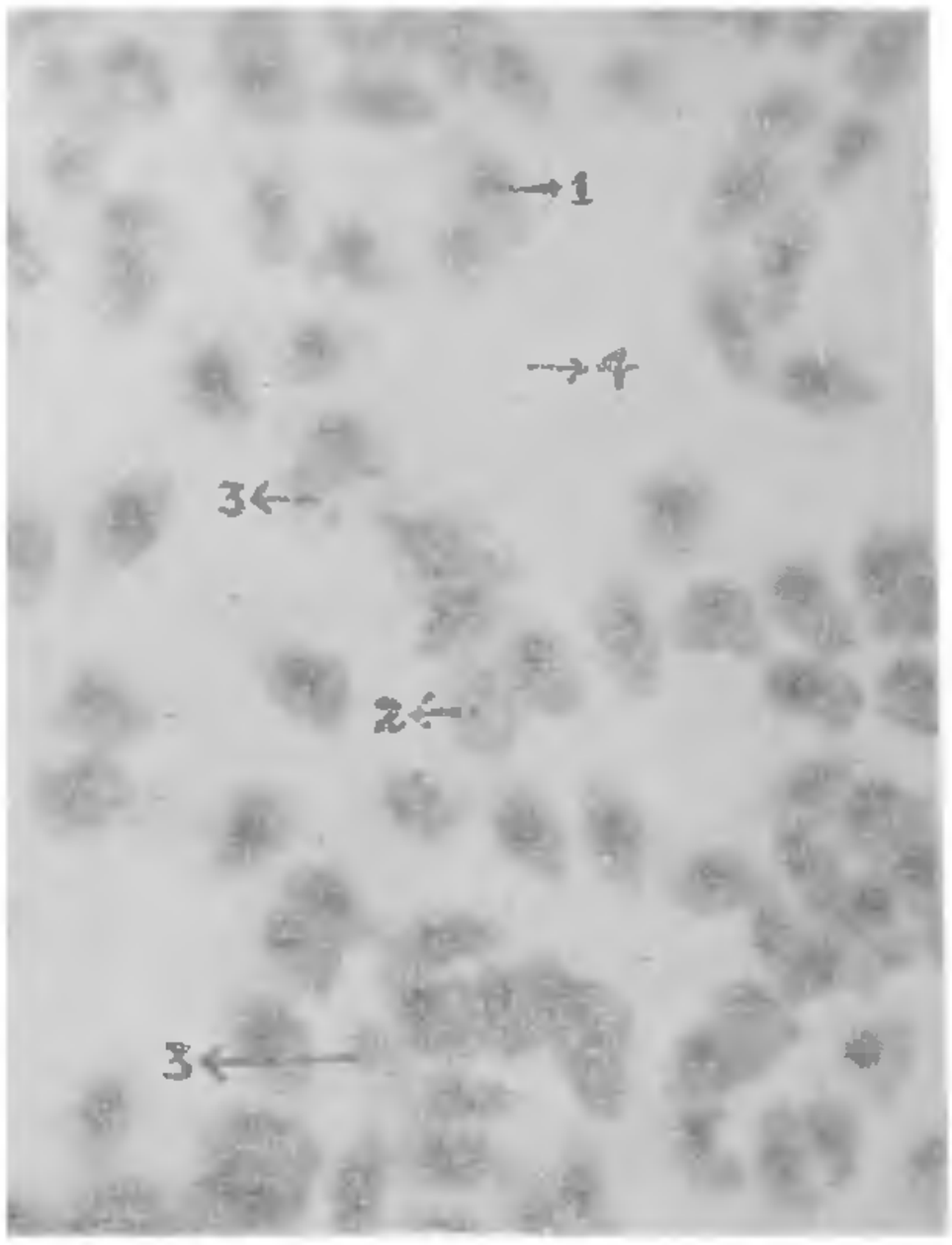

FIG. 1. Microphotograph showing the size of the blood cells in *Catla catla*, × 15,000.
1. R.B.C.; 2. W.B.C.; 3. Erythroblast; 4. Plasma.

TABLE I

Results of haematological study on Catla catla

No. of fishes observed in each case: 12 (Males: 6 and Females: 6) Mean values are in parenthesis

		Male and Female combined	Male	Female
Haemoglobin in gm/100 ml of blood	..	7·5 to 11·0 (9·14)	7·8 to 11·0 (9·40)	7·2 to 10·0 (8·90)
Clotting time in secs.	..	44 to 68 (53·25)	46 to 66 (53·50)	44 to 68 (53·00)
R.B.C. in million	..	1·76 to 2·89 (2·28)	1·83 to 2·89 (2·41)	1·76 to 2·62 (2·18)
W.B.C. in thousands	..	7·4 to 11·5 (9·241)	8·4 to 11·5 (9·816)	7·4 to 9·8 (8·660)
R.B.C. percentage	..	97·8 to 99·2 (98·4)	98·0 to 99·2 (98·5)	97·8 to 99·1 (98·3)
Erythroblast percentage	..	0·8 to 2·2 (1·6)	0·8 to 2·0 (1·5)	0·9 to 2·2 (1·7)

size of the erythrocyte is 13 μ × 8 μ. Few erythroblast cells were also noted in *C. catla*. Their percentage varies from 0·8 to 2·2 with an average of 1·6%. The average size is 9 μ × 7 μ. The presence of erythroblasts has been reported only in *Acrossocheilus hexagonolepis*[8].

The total number of W.B.C. in *C. catla* varied from 7,400 to 11,500/cmm of blood with an average of 9,241. The male fishes have a higher count (9,816) than the females (8,660).

The following five types of leucocytes with corresponding percentages given in the parenthesis were noted in *C. catla*: Thrombocytes (30), Neutrophil (18), Lymphocytes (32) and Eosinophil (16). The nucleus of the thrombocytes is large and is surrounded by a thin rim of cytoplasm. The cytoplasm of eosinophil is pinkish in colour and is filled with numerous small and rounded granules.

The percentage of basophil in *C. catla* is 4 which is much less than that of *A. hexagonolepis*[8] but others[1-7] failed to notice any basophil cells in their studies of the blood of the fresh-water Indian air-breathing fishes.

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ANTIFERTILITY EFFECT OF BIOTIN AND ITS AMELIORATION BY ESTROGEN IN THE FEMALE RAT

The minimum requirement of biotin for maintenance of pregnancy in the rat during its last few days appears to be 3 μg per day[1]. It is not uncommon that hypervitaminosis of various kinds can occur due to excess intake of some vitamins. A high dose of biotin in the rat causes irregularities of the estrus cycle and abnormal infiltration of leucocytes in the vagina in association with atrophic changes in the ovary[2]. However, there are no reports on the effects of an excess intake of biotin on the fertility of the mammal. It was of interest, therefore, to study the effects of acute doses of biotin on the mating behaviour and maintenance of pregnancy in the rat.

Colony bred virgin female rats of the Holtzman strain approximately 3 to 4 months old were selected after observing their normal estrus cycles. A batch of 36 rats thus selected was treated with a dose of 5 mg of biotin per 100 g of body weight dissolved in 0·5 ml of 0·1 N NaOH in two subcutaneous injections (morning and evening). These rats were then kept for mating with males of the same strain in 3 groups of 12 rats each in the order of 7, 14, and 21 days after biotin injections. As and when day 1 of pregnancy was identified by the observance of sperms in their vaginal smears, the females were separated from the males. In each of these 3 groups of pregnant rats, six out of the 12 were sacrificed on the morning of day 15 of pregnancy and the remaining six on day 22 of pregnancy. An untreated control group of 12 rats was run simultaneously and was sacrificed in the same manner. Since it was observed that the equivalent amount of 0·1 N NaOH (0·5 ml) used as vehicles for biotin, did not interfere with the estrus cycle[2], it was felt unnecessary to run a NaOH-treated control along with this experiment. However, towards the end of this experiment after observing some of the results, it was felt relevant to include one more group of 6 rats identically treated with biotin and mated, but given 1 μg of 17 β-estradiol dissolved in 0·1 ml of olive oil daily up to 21 days of pregnancy starting from day six. A higher dose (10 mg/100 g body weight dissolved in 1 ml of 0·1 N NaOH in 4 injections for two consecutive days) of biotin was also tried. All these rats were maintained under standardized light and dark, temperature, humidity and feeding conditions as designed for the best reproductive performance. At autopsy, the foetuses and placentae were dissected out and weighed. The number of implantation sites in the uteri was also counted.

The results of the present study showed that a large number of biotin (5 mg/100 g body weight)-treated rats although mated within 10 days, failed to maintain pregnancy (Table I). In fact most of these biotin-treated rats resorbed their foetuses and nothing but mere implantation sites were present at the end of 21 days (Fig. 1). The foetal and placental weights of the few rats that were able to maintain pregnancy despite biotin treatment were below normal