

are common contaminants from soil, dust, water and various other sources thus might have accidental entry into the insect gut. Storage insects are known to transfer and spread viable bacterial spores to the stored peas and pulses they infest, by carrying them externally or through feces¹¹. Further, the infections are also reported from human and animal consumers of such contaminated food^{12,13}

The bacterial counts/ml/5 guts revealed that gut bacterial population varied depending on the culture media. The counts from *C. analis* on sodium azide agar, macConkey agar, blood agar, glucose agar and nutrient agar was 88.0 ± 6.8 , 167.0 ± 15.5 , 224.5 ± 16.7 , 459.3 ± 28.1 , and 483.5 ± 37.5 respectively, while the same from *C. maculatus* was 24.4 ± 3.2 , 151.5 ± 13.5 , 141.8 ± 13.9 , 411.3 ± 26.8 and 511.0 ± 27.6 respectively.

Thus, cowpea weevils, *C. analis* and *C. maculatus*, as they harbour several bacterial species including some that are human pathogens and a few that are food spoiling and food poisoning organisms, frequently can contaminate, damage and spoil stored peas and pulses and also can cause health problems in consumers.

The authors are thankful to Dr. M. Nagaraj, the Vice-Chancellor, Gulbarga University, Gulbarga, for his encouragement and for the facilities.

24 September 1982; Revised 8 November 1982

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TRYPANOSOMA RUPICOLI (SP. NOV.) FROM A HILLSTREAM FISH NEMACHEILUS RUPICOLA (HORA)

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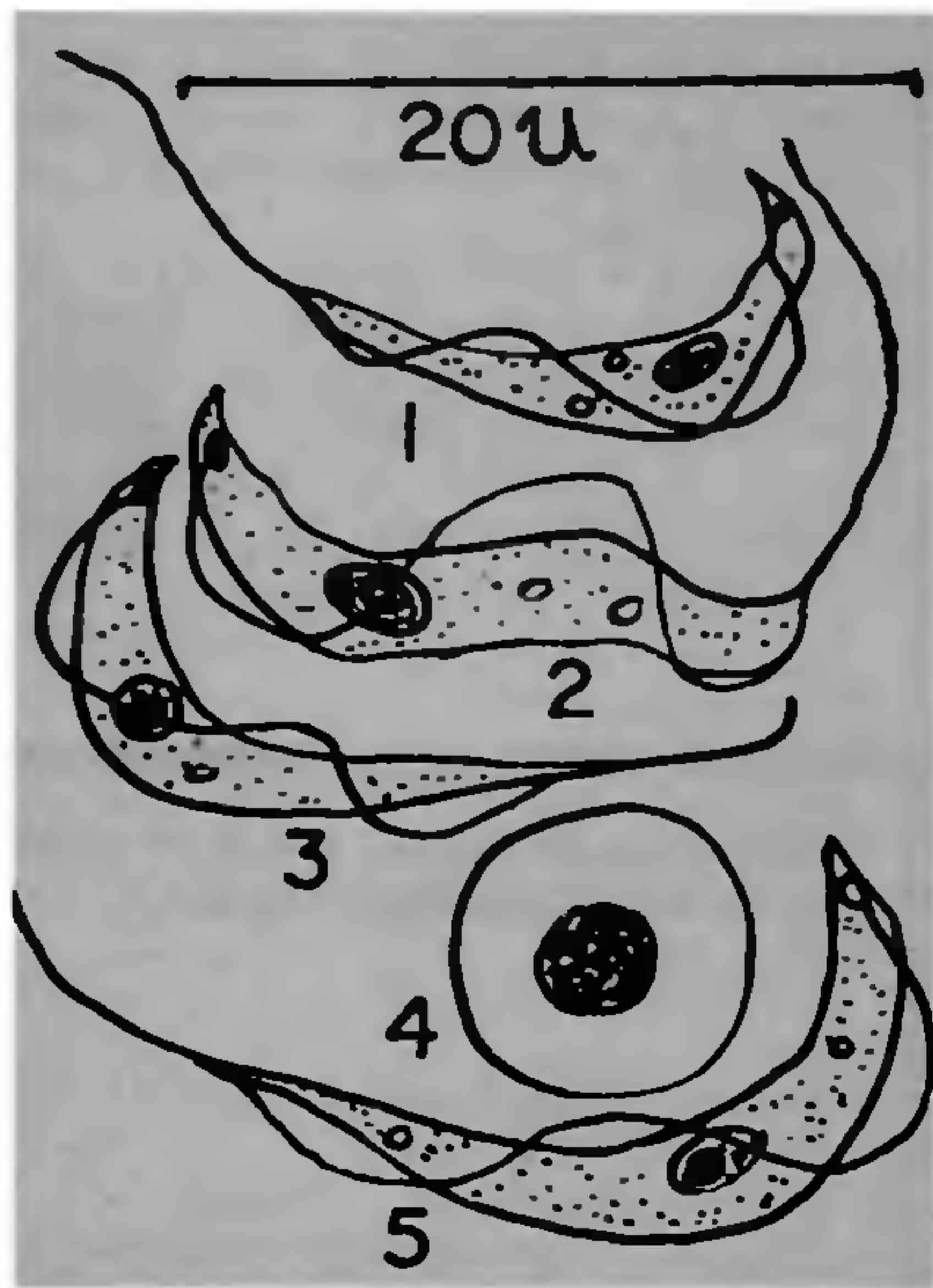
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TRYPANOSOMES of fish have been reported from all over the world^{1,2}. From the Indian sub-continent itself 20 species of the trypanosomes have been described³⁻⁸. But so far no report exists on the haematozoan parasites from the cold Himalayan realm of this country. The present paper reports the occurrence of trypanosomes from a freshwater, hillstream, teleost.

Two specimens of the host fish, *Nemacheilus rupicola* (Hora), harbouring the trypanosomes were obtained from the river Kosi, near Kosi station, 11 km north of Almora. Blood was drawn from the caudal vein of the fish, at the spot, blood smears prepared, air dried, numbered and brought to the laboratory. Each slide was stained either with Leishman's or Geimsa's stain. Presence of trypanosomes was noted under the high power microscope and then camera lucida drawings made of the parasite, under oil immersion objective^{7,8} and morphometric characters recorded.

Diagnosis and description: Body of the parasite appears stumpy or elongated (figures 1,2,3&5), typically curved in crescentic shape in most of the forms. Posterior end beak shaped and not sharply pointed, while the anterior end is sharply tapering. Cytoplasmic contents of the cell body took light azutophilic stain, granulation scant and fine. Vacuoles were present in almost all forms. Myonemes not seen.



Figures 1-5: 1, 2, 3 and 5 *Trypanosoma rupicoli* (sp. nov) from *Nemacheilus rupicola* (Hora), 4, R.B.C. of the host fish.

Nucleus was distinct in all the forms and mostly situated in the posterior half of the cell body. It was either rounded (figure 3) or elliptical in shape. A karyosome was distinctly present within each nucleus of all the forms (figures 1-3&5). Karyosome stained hyperbasophilic as compared to the surrounding nuclear material. Kinetoplast was situated at the posterior extremity of the cell. It was small-sized, rounded or elongated in shape and stained deep basophilic. Flagellum arises from the inner end of the kinetoplast, runs over the inner margin of the undulating membrane and frees at the anterior extremity of the cell. Undulating membrane was present in all forms and had 2-3 curves around the cell body of the parasite.

Body measurements: The new species of the trypanosome, described here, had the following body measurements, mean and range in parenthesis: length of the free flagellum 10. (7-14) μm , length of the body 23.4(9-29.7) μm total body length 33.3 (26.8-40) μm , maximum body width 2.8(2.5-3.2) μm , length of the nucleus 2.2(2-2.6) μm , width of the nucleus 1.3(1-1.7) μm , maximum width of the undulating

membrane 1.5(1-2.2) μm , distance of the nucleus from the aflagellar end 7.3(5.4-10.5) μm , length of the kinetoplast 0.86(0.6-1) μm , width of the kinetoplast 0.4(0.25-0.5) μm , length of the karyosome 0.7(0.5-1.1) μm and the nuclear index was found to be 0.57(0.5-0.7).

Polymorphic forms were not present in the blood smears, confirming the monomorphic nature of the parasite. Intensity of parasitemia was very low.

The *Trypanosoma rupicoli* (sp. nov) described here appears distinct in various cytomorphological characters. The new species show major difference in the typical crescentic curvature of the body, light staining behaviour of the cytosome, thinly scattered cytoplasmic granules, typical beak-like extremity of the posterior end, presence of a distinct karyosome within the nucleus and 2-3 folds of the undulating membrane. Besides, the body measurements of the new species, described here, are also quite different from the related species described so far.

30 November 1981; Revised 24 May 1982

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ON THE ACTION OF A CARBAMATE ANALOGUE AS A JUVENILE HORMONE MIMIC

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CARBARYL (Sevin) is known to be an important insecticide of the carbamate group. 8-allyl-7-flavonyl-