SHORT COMMUNICATION

THE CROPTEETH AND SPINES OF THE CROP OF LIPEURUS LAWRENSESI TROPICALIS PETERS (PHTHIRAPTERA : ISCHNOCERA)

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In the crop of bird lice, both Ischnoceran and Amblycercan, sclerotic structures known as cropteeth are present of which the shape, size and arrangement vary considerably. Consequently, the cropteeth have been suggested to have some taxonomic value. In the present paper the cropteeth of the Ischnoceran Lipeurus lawrensestropicalis have been described.

The lice were obtained directly from the poultry birds and also from a culture maintained in the laboratory according to Arora and Chopra (1957). For studying the cropteeth, the crop was removed, stained in acid fuchsin, teased on the slide at the clove oil stage and mounted in Canada balsam.

The crop of L. l. tropicalis is pear-shaped, being broadest anteriorly, at the oesophageal end. It is transparent when empty and opaque when it contains pieces of barbs and barbules. An antero-dorsal area, 200–275 m long and 20–70 m wide, bears 15–17 rows of internal cropteeth (Figs. 1 and 2), the individual rows being slightly curved. The teeth in each row either form a continuous row or are interrupted by gaps into 2–3 groups. Those in the more anterior rows are greater in number and tend to be smaller in size in comparison to the more posterior rows (Table 1). Even in the same row there is variation in their size from 4–10 m in length and 1.5–3.5 m in basal width. Each tooth is conical, attached by its broad base to the wall of the crop, with its apex pointing posteriorly. They are longer than the cropteeth of L. caponis which too is ectoparasitic on the chicken. In the latter, Waterhouse (1953) found their, maximum length to be 7 m.

Table 1. Slaning the number of cropteeth in each row

<table>
<thead>
<tr>
<th>Number of rows</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
<th>9th</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cropteeth</td>
<td>8–14</td>
<td>7–13</td>
<td>8–17</td>
<td>8–17</td>
<td>8–14</td>
<td>8–11</td>
<td>8–17</td>
<td>8–14</td>
<td>8–13</td>
</tr>
<tr>
<td>Number of rows</td>
<td>10th</td>
<td>11th</td>
<td>12th</td>
<td>13th</td>
<td>14th</td>
<td>15th</td>
<td>16th</td>
<td>17th</td>
<td>..</td>
</tr>
<tr>
<td>Number of cropteeth</td>
<td>7–12</td>
<td>6–11</td>
<td>6–11</td>
<td>6–11</td>
<td>6–9</td>
<td>4–8</td>
<td>5–8</td>
<td>2–7</td>
<td>..</td>
</tr>
</tbody>
</table>

Scattered around the cropteeth are numerous minute teeth, 1.5–4.0 m long and 1–2.5 m wide at the base. In addition to these, the entire inner wall bears fine spines, 3.5–5 m long and 0.35–0.7 m wide, arranged lengthwise.
The crop teeth of *L. l. tropicalis* are better organised than those of *Goniodes bicuspidatus* described by Waterston (1926), *Philopterus scolitus*, *Oniscabius* sp. described by Blagoveshchenskii (1969) and of *L. capensis* and *Columbicola columbae* studied by Waterhouse (1953).

The manner in which the crop teeth operate was studied in fully hardened as well as tender specimens, in the former after removing the tegrites under Stereozoom binocular and in the latter directly with strong incident illumination.

The barbs and barbules are cut by the mandibles into pieces of uniform size and the latter stored length-wise in the crop. Waves of anti-peristalsis starting at the posterior end of the crop, followed by peristalsis in the opposite direction, cause these pieces to strike against the rows of crop teeth so that their mechanical trituration occurs. The smaller teeth and the spines probably give purchase to the crop contents.

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REFERENCES


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Fig. 1. Crop showing the arrangement and distribution of crop teeth. x63.

CR = Crop, CT = Crop tooth, OE = Oomphaga.

DRUG METABOLIZING ENZYMES IN MOUSE LIVER INFECTED WITH PLASMODIUM BERGHEI

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Liver metabolism is adversely affected during infection with malarial parasite (von Brand, 1973). Drug demethylation and hydroxylation are the two important processes which constitute the first one of drug metabolism in liver (Sherlock, 1975). The pattern of drug metabolism is well known to be conditioned by several factors like liver disease and physiological stress (Wilkinson and Schenker, 1978; Kato, 1977). Such an information is not available with regard to the host in malarial infection. The present communication deals with drug metabolizing enzymes in mouse liver infected with Plasmodium berghei.

Male mice (Swiss strain, 20-30 g body weight) drawn from the C.D.R.I. stock colony were used. *P. berghei* was received from the National Institute of Communicable Diseases, New Delhi. The inoculum of infected blood was prepared in 3.8% sodium citrate and one million parasitized R.B.C. were injected intraperitoneally in each mouse. The animals were sacrificed when the parasitemia had established at 10-15%. Liver was washed with 150 mM KCl and homogenates (10%, w/v) prepared in the same solution. The post-mitochondrial fraction was prepared as described by Schneider and Hogeboom (1950). Aminopyrine demethylase and aniline hydroxylase activities were assayed in post-mitochondrial fraction according to the methods of Boul, Hook, Elsterling, Gram and Fouts (1972) and Imai and Sato (1966) respectively. Protein estimation was done according to Lowry, Rosebrugh, Farr and Randall (1951).

Table 1. Aminopyrine demethylase and aniline hydroxylase activities in mouse liver infected with *P. berghei*

<table>
<thead>
<tr>
<th>Group</th>
<th>Aminopyrine demethylase (n mole formic acid formed/mg protein/hr)</th>
<th>Aniline hydroxylase (n mole p-aminophenol formed/mg protein/30 min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>38.56±7.36 (6)</td>
<td>1.71±0.19 (6)</td>
</tr>
<tr>
<td>Infected</td>
<td>21.22±3.09 (6)*</td>
<td>0.52±0.16 (6)*</td>
</tr>
</tbody>
</table>

**P<0.01; Number of animals used in each experiment is given in parentheses.**

The results of the behaviour of two microsomal drug metabolizing enzymes, aminopyrine demethylase and aniline hydroxylase, are shown in Table 1. It is clear from the data that the activities of both the enzymes in the liver of infected animals got markedly decreased as compared with the control animals. It would clearly suggest that malarial...