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EXPERIMENTAL INGESTION OF *DACUS ZONATUS* SAUNDERS (DIPTERA: TEPHERITIDAE) AS A POSSIBLE CAUSE OF HUMAN PSEUDOMYIASIS IN PAKISTAN

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In Pakistan during June 1983, the possibility of enteric myiasis in man by the larvae of *Dacus zonatus* Saunders was tested experimentally. Human volunteers ranging in age from 25 to 38 years ingested 25 *D. zonatus* maggots and their stool were collected and examined.

The results of these tests indicate that the larvae of *Dacus zonatus* did not survive passage through the human alimentary tract, and this species cannot cause enteric myiasis in man.

INTRODUCTION

Myiasis indicates the infestation of live human and vertebrate animals by dipterous larvae, which, at least for a certain period feed on the host's dead or living tissue, liquid body substances, or ingested food [10].

Conflicting data are available on enteric myiasis recorded from humans. *Drosophila funebris* (Fabricius) has been shown to be the cause of one case of accidental intestinal myiasis in North America [3, 8, 7, 6]. The experimental investigation of Causey [2], however, demonstrated the limited possibility of the survival of fly maggots in the alimentary tract in view of their high oxygen requirement. Similar conclusions have been drawn by Zumpt [10] on the basis of data reported by other workers. Several cases of gastrointestinal myiasis of man with the larvae of *Dacus* sp. have been reported [7, 5].

In Pakistan, the presence of alive or dead larvae of *Dacus zonatus* Saunders in nearly 150 stool samples examined indicates the accidental eating or swallowing of eggs or larvae in semiripe, ripe or overripe fruits [5]. A few cases reported by physicians also show that patients, particularly children, complained of nausea, headache, bowel irritation and even vomiting before defecation.

In view of the significance of various above reports the present authors tested experimentally the possibility of enteric myiasis in man by *Dacus zonatus* Saunders. This species is distributed throughout Pakistan [4]. The larvae of this species infest *Carica papaya, Citrus* sp., *C. sinesis, Cydonia vulgaris, Grewia asiatica, Hibbiscus esculentus, Malus pumila, M. sylvestris, Mangifera indica, Momordica charantia, Phoenix dactylifera, prunus persica, Psidium guajava, Punica granatum, Putranjiva roxburghii, Pyrus sinesis* and *Zizyphus* spp. [8].

EXPERIMENTAL

In June 1983 10 human volunteers ranging in age from 25 to 38 years swallowed 25 mature active larvae of *Dacus zonatus* Saunders with a small amount of plain water. The larvae were removed from infested overripe mangoes. Stools from the human subjects were collected in pots which were covered and sealed with a scotch tape, immediately after defecation to prevent any possibility of contamination. In each case only two faecal samples subsequent to ingestion were preserved. The faecal specimens were brought to the laboratory for examination at the earliest convenience. They were washed through a No. 10 sieve into an enamal dish and the larvae found were observed for evidence of life. The data resulting from these tests are summarized in Table 1.

RESULTS AND DISCUSSION

For each of ten volunteers two faecal samples were screened before most or all of the larvae were recovered. Table I presents the recovery success for stool sampled. No live *D. zonatus* maggots were recovered. In one case 92% of the ingested larvae were recovered within 23 hr. In three cases 88%, in other three 84 and in rest of the three 80% larvae were recovered within 22 to 23 hr, 21 to 24 hr and 20 to 23 hr. respectively.

The larvae were severely macerated in second stool in the case of Sl. No. 2, 4, 5 and 9. They were partially diges-

Table 1. Recovery of ingested 3rd instar maggots (1) of *Dacus zonatus* saunders in stool of human volunteers

Volunteer No.	Hrs. to 1st defecation (2)	Maggots in Stool 1	Hrs. to 2nd defecation (2)	Maggots in Stool -2	% Recovered	Remarks
1.	7.25	15	21.00	6	84	Partially digested in first stool.
2.	9.25	12	22.75	8	80	Severely macerated in second stool.
3.	14.00	18	26.25	3	84	No. evidence of digestion in first stool.
4.	10.00	16	22.00	6	88	Severely macerated in second stool.
5.	7.75	15	21.75	7	88	Severely macerated in second stool.
6	12.25	14	22.75	8	88	No. evidence of digestion in first stool.
7	11.25	18	22.75	5	92	No. evidence of digestion in first stool.
8	5.5	16	21.00	4	80	No. evidence of digestion in first stool.
9	10.00	12	20.5	8	80	Severely macerated in second stool.
10	13.5	15	22.25	6	84	Partially digested in first stool.

1. 25 maggots ingested by each volunteers.
2. Hours post-ingestion to defecation.

ted in the case of Sl. No. 1 and 10. There was no evidence of digestion in the case of Sl. No. 3, 6, 7, and 8. The results of these tests indicate that no larvae of *Dacus zonatus* survived passage through the human alimentary tract. In the light of these results it is possible to conclude that this species cannot be as a possible cause of Pseudomyiasis in humans.

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