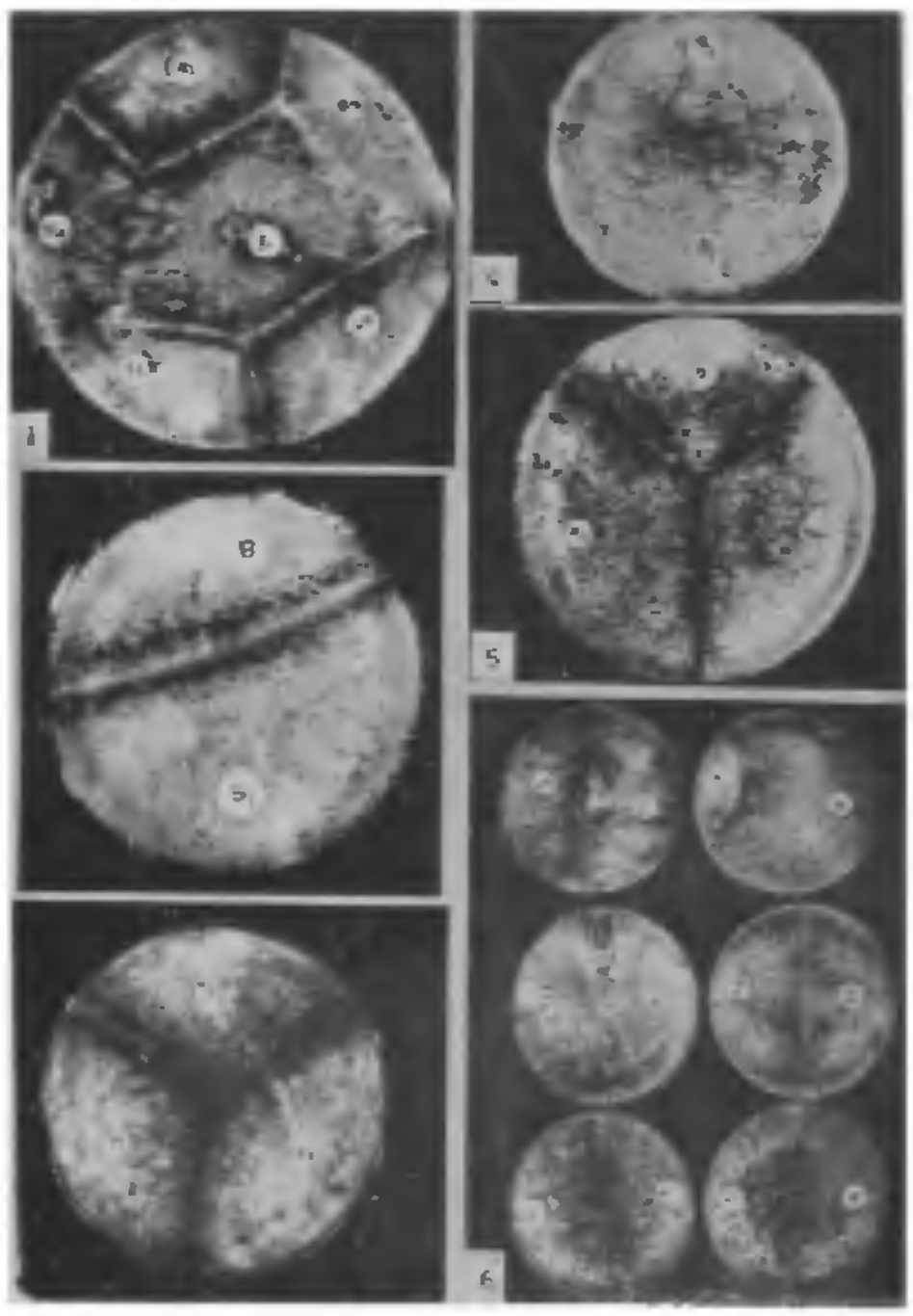
AVERSION IN ISOLATES OF *SCLEROTIUM ROLFSII* SACC.

THE present paper reports the aversion phenomenon for the first time among six isolates of *Sclerotium rolfsii* from different plant hosts being collected around Bangalore.

Sclerotium rolfsii isolates were established from infected roots of brinjal, field soils of ragi and sorghum, *i.e.*, three isolates from ragi (R_1, R_2, R_3), two from sorghum (S_1, S_2) and one from brinjal (B). Single sclerotial cultures of all the isolates were maintained by transfer on potato dextrose agar slants. For study of aversion between different isolates, a set of six isolates was inoculated in a petri-plate containing 25 ml of PDA. The brinjal isolate (B) was inoculated in the centre of the plate and the other five isolates were transferred around it at equal distances (Fig. 1). The inoculated plates were incubated at 25° C. The observavations were recorded on the 4th day after inoculation. For confirmation of the observations each test was repeated three times.



FIGS. 1—6

Results

Interaction among six isolates showed aversion or non-aversions. There was complete intermingling of hyphae along the interfaces of the two colonies of non-aversion type of isolates, *viz.*, B–S_2 ; B–R_3 (Fig. 1). Among the isolates showing aversion no intermingling of hyphae was observed. Instead, there was a clear demarcation line at the meeting point of the hyphae of the two colonies B–R_1 : B–R_2 and B–S_1 and along this line sclerotia were formed. In most cases a single line of demarcation was found but in isolates B–S_1 two lines were present (Fig. 2). Variation in the intensity and thickness of demarcation was seen among the isolates R_1 R_2 R_3 (Fig. 3). Sorghum isolate (S_1) and Ragi isolate (R_1) showed non-aversion (Fig. 4). Similarly, brinjal isolate (B), Sorghum isolate (S_2) and ragi isolate (R_3) showed non-aversion (Fig. 5) whereas the isolate R_2 showed aversion with all the isolates tested. Fig. 6 indicates the non-aversion of the same isolates.

The study on the aversion reaction among the isolates of different hosts and the same host is of interest, since it provides clue to the interrelationship among the pathotypes, of different hosts. These isolates in relation to the aversion were found to be distinct and stable and the behaviour of each isolate remained consistent in repeated tests. Present observation is in conformity with those of Whitney and Parmeter[3] for *Rhizoctonia solani* Ellingboe[2] for *Schizophyllum commune* and Dutt *et al.*[1] for *R. solani*.

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NEW HEAD ROT PATHOGENS OF SUNFLOWER

DURING a survey of sunflower (*Helianthus annuus* L.) in Rajasthan, the author observed head rots caused by *Pythium* and *Rhizoctonia*. Both are new records on sunflower as head rot pathogens.

Most of the *Pythium* species were found pathogenic on sunflower roots (Sideris,[5,6]. Schultz[4] noted severe root infection due to *Pythium debaryanum*. No reference on involvement of any of the *Pythium* spp. in head rot has been seen so far. The organism was isolated on oat agar and was identified as *Pythium aphanidermatum* (Eds.) Fitz. It was found pathogenic even without injury.

Rhizoctonia bataticola (Taub.) Butl. causing head rot has not been reported on sunflower so far, though it has been reported to cause root rot and wilt of plants (Sackston,[3]; Bekesi *et al.*[1]; Kolte and Mukhopadhyay[2]. Pathogenicity tests made on injured

and uninjured heads revealed that it could attack injured heads only, *Heliothis* larvae and birds usually cause injury to heads and which, probably, serve as the avenue for pathogen's attack.

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STUDIES ON TOTAL, FREE AND ESTERIFIED STEROLS IN THE HEAD PART OF *ANTHERAEA MYLITTA* (LEPIDOPTERA) DURING LARVAL DEVELOPMENT

Introduction

DURING the growth and development, insects periodically shed their exoskeleton and it is the moulting hormone *β*-ecdysone, the crucial regulator that initiates this process. The neurosecretory cells of brain have been known to control the moulting process *via* ecdysiotropic hormone which activates the prothoracic glands[1, 2] to secrete the moulting hormone which in its turn stimulates the moulting process.

Cholesterol is indispensable for insect growth and development and it also participates in the biosynthesis of moulting hormone and several other hormones[3, 4]. Ecdysiotropic hormone is known to be released from the insect brain into the haemolymph. Hence, with a view to investigating if cholesterol played any role in the biosynthesis of ecdysiotropic hormone, the following study on the cholesterol in the head part of *A. mylitta* at various stages of its larval development was undertaken.

Materials and Methods

Larvae of *Antheraea mylitta* were procured from Tasar Seed Supply and Research Centre, Ranchi (Bihar). Head part (1st segment) was cut off from chilled insects, weighed and homogenized in chloroform-methanol mixture (2 : 1, v/v) till complete extraction of lipids was effected. The chloroform layer was evaporated to dryness at 30 40° C *in vacuo* and dissolved in isopropanol (2·0 ml). This was employed for the estimation of total, free and esterified sterols by Leffler's method[5].

All assays were carried out in triplicates in three sets of experiments employing 10 insects in each and the average values were employed for calculation. Estimations were also made on three individual insects. For plotting of graph, the average value was taken. Variations are presented in Fig. 1.

Results and Discussion

Esterified cholesterol constituting about 74–85% of the total sterols is markedly utilized till the 2nd day of the ecdysed fourth instar larva (Fig. 1). A high peak of total and esterified sterols on the 3rd day, after every larval moult indicates the utilization of the accumulated dietary sterols for the hormonal activity required during the moulting process. The high level on the eve of spinning commencement followed by a decline during the process is noteworthy.

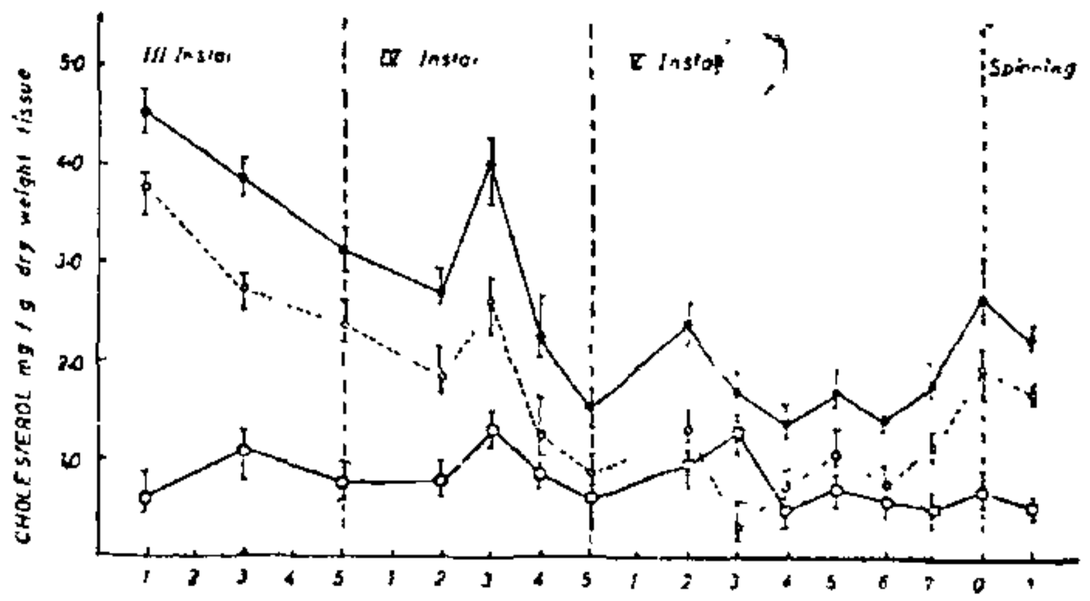

FIG. 1. Variation in Total, □ Free and ○ Esterified cholesterol in the head part of *Antheraea mylitta* during larval and spinning period.

Free cholesterol, although not exhibiting much marked variation, the pattern followed is more or less similar to that of total and esterified cholesterols, evincing its accumulation during feeding period and utilization during moulting.

There appears to be a controversy regarding the chemical nature of insect brain hormone. Kobayashi and Kirimura[6] extracted an oily substance from *B. mori* pupal brain which when injected induced adult development in "Dauer-pupae" produced by the removal of the brain immediately on pupation. On purification, this substance was identified as cholesterol[7]. Similar reports were also made by Williams for *Hyalophora*[8]. Thus, while these authors consider the insect brain hormone as a sterol, Ichikawa and Ishizaki[9] have forwarded evidence to its being a polypeptide. This material was also shown to possess several properties similar to those of a protein.

In the present investigation the significant depletion of cholesterol (both free and esterified) in the head part of *A. mylitta* at each and every moult, emphasizes