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A HITHERTO UNRECORDED COLLATERAL HOST OF *USTILAGINOIDEA VIRENS* (CKE) TAK.

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FALSE smut of paddy (*Oryza sativa* L) also known as pseudosmut or green smut caused by *Claviceps oryzae-sativae* Hashioka (imperfect stage, *Ustilaginoidea virens* (Cke) Tak was first reported by Cooke[1] from Tinnevelley in Tamil Nadu, India. The disease cycle of this pathogen is still obscure. No collateral host has been reported so far though it was suspected that some wild grasses may act as reservoirs of primary inoculum[2].

During extensive survey for the incidence of false smut of paddy in Dakshina Kannada district, a coastal region of Karnataka, during kharif 1983, it was found that with the incidence of false smut in paddy, *Digitaria marginata* L, a common weed around paddy field was also infected with false smut (figure 1). False smut infection in *D. marginata* was observed in 85 % of the fields surveyed.

Cross inoculation studies: To study the infectivity of smut spores occurring on *D. marginata* to paddy panicle, a cross inoculation test was conducted. Smut balls (Pseudomorphs) were collected from infected *D. marginata* and a spore suspension (ca 10^4 spores/ml) was prepared in sterile distilled water. This spore suspension was inoculated to individual spikelet of paddy (cv dwarf Basmati). The inoculated panicles were covered with polyethylene bags for 15 days and observed for smut ball development.

Figure 1. Spikelets of *D. marginata* showing pseudomorphs caused by *U. virens*.

On the 10th day yellowish smut balls started emerging out from the glumes. Among 9 grains inoculated in each of four panicles an average of four grains per panicle developed into the smut balls. Panicle inoculated with sterile distilled water and covered with polyethylene bags did not show smut ball development. Uninoculated panicles which were not covered with polyethylene bags also did not show any infection. This proves that spores from infected *D. marginata* do play an important role in causing false smut incidence in paddy.

Butler[3] suggested that false smut infection of paddy might be occurring at the flowering stage. Galloway[4] produced evidence to show that the infection was neither soil-borne nor seed-borne. During our field survey it was found that before the maturity of ear-bearing tillers of paddy, *D. marginata* around the field was infected with false smut. It is possible that when paddy flowers open, the smut spores from infected *D. marginata* become air-borne and infect paddy.

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OOCYTE DIFFERENTIATION AND VITELLOGENESIS IN THE CARIDEAN PRAWN *CARIDINA RAJADHARI* (BOUVIER)

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THE development and eventual fusion of the male and female gametes are of crucial importance to all animals, ensuring both the continuation of the species and its adaptibility to changing conditions[1]. Studies on the oocyte differentiation are basic in the broader context of establishing the timing of breeding seasons. Published findings concerning the oogenesis of freshwater crustaceans are only a few. Details of oocyte development in the crayfish, *Cambarus clarkii*[2] and freshwater prawns *Palaemon lamarrei*[3], *Palaemon paucidens*[4] and *Macrobrachium lanchesteri*[5] were reported. The following study was therefore undertaken on the oocyte differentiation and vitellogenesis of the caridean prawn, *Caridina rajadhari* (Bouvier).

Caridina rajadhari (Decapoda: Atyidae) was collected from Kham river, near Aurangabad, Maharastra and they were immediately brought to the laboratory. Thereafter healthy, mature, non-ovigerous, intermoult (stage-C) animals of identical size (mean total length 2.5 cm) and ovarian stage (green-coloured ovary) were selected. The different regions of the ovaries were fixed in Bouin's or Helly's fluid. Paraffin sections of 7 μm thickness were cut and stained with Harris' haematoxylin using eosin as counterstain. The average oocyte diameter was calculated by measuring rounded oocytes with complete nuclei.

Histological examination of the ovaries of *C. rajadhari* indicated the presence of oocytes in different stages of development (figure 1). During differentiation, four stages could be identified as oogonial cells, early vitellogenic, vitellogenic and late vitellogenic oocytes with the following measurements (table 1). The distinction of these stages depended upon their cytoplasmic content and size of the oocytes. The germinal zone was found to be situated on the ventrolateral region of the ovary (figure 2). The ventrolateral position would be advantageous for the growth of the oocytes in the opposite direction due to the tubular nature of the body cavity and the availability of more space in the dorsolateral regions[6]. The oogonial cells were found in the clusters near the germinal zone. These cells were basophilic with large round nuclei surrounded by a thin rim of oocortex, which lacked stainable yolk materials[7]. By rapid succession of mitotic divisions, the oogonial cells increased in number and size (5 to 38 μm). At the end of the early vitellogenic phase, the nucleus of the primary oocyte swelled into germinal vesicle. The primary oocyte possessed large germinal vesicle and granular cytoplasm (figure 3). During vitellogenic phase, the yolk granules started accumulating in the oocortex. Eosinophilic granules were observed in the perinuclear ooplasm (figure 4). The prinuclear ring disappeared with the advancement of vitellogenesis. Generally yolk was formed from both extraoocyte sources

Table 1 *Oocyte size classes, measurements and characteristics of the developing oocytes of C. rajadhari*

Oocyte size classes	Oocyte diameter range (μm)	Stage of the Oocytes
I	10 - 14	Oogonial cells
II	15 38	Primary oocytes
III	39 42	Early vitellogenic
IV	43 53	Vitellogenic
V	53 74	Vitellogenic
VI	75 93	Late vitellogenic