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## MYCOFLORA ON UNBLOOMED FLORAL BUDS OF *PAPAVER SOMNIFERUM* L.

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WHILE studying the mycoflora of phylloplane of *Papaver somniferum* at the fruiting stage of the plant it was noticed that some of the flower buds remained unbloomed consequent upon which they dry and decompose while still attached to the plants. The successional pattern of the fungi on decaying unbloomed buds was studied.

Ten unbloomed flower buds were collected at random from the experimental plot starting from the second week of January when unbloomed buds were first seen to be drying. Sampling was continued for 50 days till the first week of March when the decaying buds became fragmentary and started falling due to advanced decomposition. The microfungi were isolated by the moist chamber method. The chambers were prepared by keeping exactly fitting blotting paper discs in the sterilized petri dishes (9 cm dia) and moistening them with sterile distilled water. Five such petri dishes were taken and two buds were aseptically kept in each plate and were incubated at $25 \pm 1°C$ for five days. Appropriate amount of water was added periodically to moisten the blotting papers. The fungi were identified and recorded at an interval of five days till the material became fragmentary.

The fungal species and their per cent colonization are given in table 1.

In all 11 fungi were isolated from the unbloomed buds of *P. somniferum* of which 3 were Zygomycetes (27.27%) and 8 were Deuteromycetes (72.73%). It was interesting to note that all the three Zygomy-

**Table 1** *Fungal species and their per cent colonization on unbloomed and decaying floral buds of Papaver somniferum*

| | Incubation period (days) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Fungal species | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| *Absidia repens* | 50 | 40 | 40 | – | – | – | – | – | – | – |
| *Alternaria alternata* | 10 | – | 20 | 20 | – | – | – | – | – | – |
| *A. tenuissima* | – | – | 20 | 10 | 10 | – | – | – | – | – |
| *Aspergillus flavus* | – | – | – | – | – | 40 | 60 | 50 | 50 | 40 |
| *A. luchuensis* | – | – | – | – | – | 30 | 40 | 40 | 20 | 30 |
| *A. sydowi* | – | – | – | – | – | – | 20 | 20 | 10 | – |
| *Cephalosporium acremonium* | – | 20 | 40 | 10 | – | – | – | – | – | – |
| *Fusarium dimerum* | – | – | – | – | – | 40 | 10 | – | 40 | 40 |
| *F. semitectum* | – | – | – | 20 | 40 | 20 | 10 | – | – | – |
| *Mucor hiemalis* | 80 | 60 | 60 | 30 | 30 | 10 | – | – | – | – |
| *Rhizopus nigricans* | 10 | 20 | 10 | – | – | – | – | – | – | – |

'—' = Absent.

cetes were among the primary or early colonizers recorded from the fifth day onwards with a few more Deuteromycetes viz. *Alternaria alternata*, *A. tenuissima* and *Cephalosporium acremonium*. A few species like *Aspergillus flavus*, *A. luchuensis*, *A. sydowi* and *Fusarium dimerum* were recorded during the last stages of decomposition. *Absidia repens* occurred only in the beginning but for a short period i.e. between 20th and 35th days of sampling.

The causes of deterioration have so far not been discussed adequately. Kanaujia and Singh[1] studied the successional pattern of fungi associated with decomposing unbloomed spadix of *Pandanus fascicularis*. There may be two possible reasons for unblooming of floral buds: (a) the buds lost their resistance due to some physiological or environmental reasons and started decaying and hence supported a good saprophytic growth of microflora, and (b) due to colonization of buds by different parasitic and/or saprophytic microflora and by their toxin secretions the buds were prevented from blooming. Several workers[2–4] observed that the healthy active buds of some plants act as a primary site for the growth of non-pathogenic and pathogenic bacteria.

It is well known that during colonization of plant parts sugars, starch and protein are decomposed first and hemicellulose, cellulose and lignins are subsequently decomposed. The early appearance of Zygomycetes agrees with the above observation. Similarly members of Deuteromycetes appeared during the last stages of decomposition because they mostly utilize cellulose and hemicellulose. The high frequency of *Mucor hiemalis* and *Absidia repens* is due to their ability to actively utilize the simple sugars from the host and the high rate of mycelial growth and spore production.

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## STAGE-SPECIFIC PROTEINS DURING THE ONTOGENY OF *DYSDERCUS KOENIGII* (HETEROPTERA: PYRRHOCORIDAE)

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In insects as in other animals, one of the major biochemical events resulting from cellular activation is the protein synthesis. Haemolymph proteins have been studied in different groups of insects by a number of workers. While most of these studies pertain to holometabolous insects, only a few relate to hemimetabolous insects[1]. One characteristic feature of holometabolous insects is the transformation from larva to adult and during this period there is a selective qualitative control of protein synthesis through a coordinated switching of different sets of genes[2]. This stage-specific pattern of protein synthesis is correlated with changes in gene activity at different phases of the insect's life cycle[2,3]. On the other hand, it has been pointed out that absence of such stage-specific proteins during metamorphosis is characteristic of hemimetabolous insects[4–8]. The present study was undertaken to check the occurrence of stage-specific proteins in another hemimetabolous insect, *Dysdercus koenigii*.

The insects were reared in glass jars at 28 ± 1° C, 70–75% RH and 16 hr photoperiod. They were fed on soaked cotton seeds and water provided in cotton plugged vials. Eggs laid in single heap were removed daily in Petri dishes for hatching. I and II instars being too small to yield adequate haemolymph samples could not be included in these studies. Haemolymph protein pattern (HPP) was studied by the method of Webber *et al*[9]. Gels were fixed in 25% TCA, rinsed in distilled water and stained in 0.25% Coomassie Brilliant Blue R (Sigma).

The HPP of the III, IV, V instar larva and the newly emerged adult is shown in figure 1. The III instar larva yields a total of 11 bands (3–6, 8–10, 15–18), there being no variation during the instar's life. The IV instar larva yields one additional band (7) making a total of 12. This band appears on the first day of the instar's life and continues up to the end of the V instar. The V instar yields two additional bands (11, 12) over the IV instar making a total of 14. Both the new bands appear on the first day of this instar and continue up to its end. In the newly emerged adult bands 3–5, 7, 11, 12 are lost and four new bands (1, 2, 13, 14) appear.