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Whether optimum pollen germination and tube length attained in the same growth medium (sucrose + basalin EC) by five cultivars of *Petunia grandiflora!* : Further evidence of a criticism of Banerji and Gangulee (1937), Dharurkar (1971-Ph.D. Thesis), Nair, Nambudiri and Thomas (1973), Berg (1973), Brandt (1974), Vick and Bevan (1976), Rasmussan (1977), Navara, Horvath and Kaleta (1978), Mhatre (1980-Ph. D. Thesis), Mhatre, Chaphekar, Ramani Rao, Patil and Haldar (1980), Shetye (1982-Ph.D. Thesis) and Giridhar (1984-Ph.D. Thesis)

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SUMMARY

All the concentrations (10^{-17}-10^{-2}-10^{-3}, 1, 5, 10, 20-20-100 mg/ml) of basalin EC tried suppressed the germination of pollen of F series of duet, F-24 series of white cascade, duet and sonata and F-48 series of all the 3 cascades. 10^{-17}-10^{-11} and 10^{-17}-10^{-7} mg/ml proved to be the widest ranges of concentrations of basalin EC which stimulated the germination of pollen and tube growth of *Petunia grandiflora*, respectively.

Key words : Palynology, Physiology of pollen, Growth substances, Herbicides.

Herbicides however, have many other effects besides the one that impels their use. It is therefore necessary that all the aspects of herbicidal action be known in order to utilize their services to the full extent.

MATERIALS AND METHODS

Pollen of successive flowers (*viz.* F, F-24, F-48, F-72 series *i.e.* open flowers and the flower buds which require 24, 48, 72 hours to open, respectively) of 5 cultivars of *Petunia grandiflora i.e.* 3 cascades (pink, red, white), duet and sonata were collected soon after the dehiscence of anthers in the open flowers. Germination of pollen grains was studied by standing-drop technique in the optimum concentrations of sucrose which acts as control as well as in the optimum concentrations of sucrose supplemented with the wide range of concentrations (10^{-17}-10^{-2}-10^{-3}, 1, 5, 10, 20-20-100 mg/ml) of basalin EC. Pollen grains were incubated soon after the dehiscence of anthers. The cultures were then transferred to a moist filter chamber, stored at room temperature (31.3-32.8°C) having RH 67 per cent and in diffuse laboratory light. The experiments were run in triplicate and average results were recorded. Observations on the germination of pollen and tube growth were recorded 24 hours after incubation. For each experiment a random count of 200 grains was made to determine the percentage of pollen germination. For measurement of length of pollen tubes, 50 tubes were selected randomly and measured at a magnification of 100x.

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RESULTS AND DISCUSSION

Present investigation proved that the percentage of pollen germination is always less than the pollen viability. However, Banerji and Gangulee (1937) and Dharurkar (1971-Ph.D.Thesis) reported higher percentage of pollen germination than the pollen viability in *Eichhornia crassipes*. The claim of Banerji and Gangulee (1937) and Dharurkar (1971) is challenged by Salgare (1986b, 95, 2000a, 06i, l, n, q, 07a-e, i, k-l, n-o, r-t) who stated that the observations of Banerji and Gangulee (1937) and Dharurkar (1971) are exaggerating.

Even the lowest concentration of basalin EC tried (10^{-17} mg/ml) suppressed the germination of pollen of F series of duet, F-24 series of white cascade, duet and sonata and F-48 series of all the 3 cascades (Table 1). Even such a low concentration (10^{-17} mg/ml) of basalin EC prevented the germination of pollen of F-72 series of pink-flowered cultivar of *Catharanthus roseus* (Salgare, 1983-Ph.D. Thesis). As low as 10^{-17} mg/ml basalin EC suppressed the germination of pollen of F-24 series of light-violet- and violet-flowered cultivars of *Petunia*