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Whether optimum pollen germination and tube length attained in the same concentrations of the growth medium (sucrose + potassium borate) by five cultivars of Apocynaceae!: Further evidence of a criticism of Banerji and Gangulee (1937), Brewbaker and Kwack (1963), Sudhakaran (1967-Ph.D.Thesis), Dharurkar (1971 - Ph.D. Thesis), Nair, Nambudiri and Thomas (1973)*

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All the concentrations (1-1000 mg/ml) of mineral (potassium borate) stimulated the germination as well as tube growth of all the 5 cultivars of the Apocynaceae.

Pollen physiology has attracted the attention of plant breeders and horticulturists ever since the discovery of pollen tube by Amici (1924).

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 Apocynaceae *e.g.* red-, pink- and white-flowered cultivars of *Nerium odorum* Soland. and pink- and white-flowered cultivars of *Catharanthus roseus* (L.) G. Don. 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 (1, 5, 10, 20-20-100, 200-200-1000 mg/ml) of mineral (potassium borate). Pollen grains were incubated soon after the dehiscence of anthers. The cultures then transferred to a moist filter chamber, stored at room temperature (28.3-31.5°C) having RH 66% 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.

In the present investigation even the different cultivars of the same species showed the variations in the percentage of their pollen viability (Table 1). Reduced pollen viability has been interpreted as an indication of suspected hybridity in wild populations. Nevertheless, variations in pollen viability may affect the breeding systems of the species concerned, and if the pollen viability can be altered by the environment, then the breeding system itself may be under some degree of environmental control.

As a rule 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) was challenged by Salgare (2006) who stated that the observations of Banerji and Gangulee (1937) and Dharurkar (1971) were exaggerating.

Salgare (1986, 2006) observed the germination of pollen of F-72 series of pink-flowered cultivar of *Catharanthus roseus in vitro* culture of sucrose. Trisa Palathingal (1990-M.Phil.Thesis) stated that the pollen of F-72 series of pink-flowered cultivar of *C. roseus* failed to germinate in Brewbaker and Kwack's (1963) culture medium. This confirms that Brewbaker and Kwack's (1963) culture medium was not perfect.

Potassium borate stimulated the germination of pollen as well as tube growth of all the series investigated of the Apocynaceae (Table 1). 1-1000 and 1-10 mg/ml proved to be the widest and the narrowest ranges of concentrations of the potassium borate, respectively which stimulated the germination of pollen of the Apocynaceae. An optimum concentration produced as high as 480.00% and as low as 9.76% stimulation in the germination of the pollen of the Apocynaceae (Table 1).

Pollen germination stimulation (in %) is in the following proportions in various floral series, F:F-24:F-48:F-72 for potassium borate. These are for optimum concentrations of potassium borate:

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