**Abstract**

We investigated the mycorrhizal associations in 31 adult wild or cultivated green orchids (22 epiphytic, 8 terrestrial, and 1 species with both epiphytic and lithophytic life-forms) from different vegetation types of Western Ghats, southern India. All the orchids examined were mycorrhizal with the extent of colonization varying with species and life-forms. Mycorrhizal association has been reported for the first time in 25 orchids. The entry of mycorrhizal fungi into the roots was mostly through root hairs. In certain epiphytic species, the fungal entry was directly through the epidermis. The fungi formed highly coiled hyphal structures (pelotons) within the root cortex, and their size was related to the cell size. The fungal invasion of the cortical cells was through cell-to-cell penetration. The cortical cells contained intact and lysed pelotons, and their ratio varied with species and life-forms. No significant relationship existed between root hair characteristics and the extent of colonization. Chlamydospores and microsclerotia-like structure were frequently found within the cortical and root hair cells. The liberation of fungal reproductive structures was by spiral dehiscence of the root hairs.