

Seed Germination Behavior of Eight Medicinal Plant Species of Sri Lanka**Dayananda J.H.S.* , Jayasuriya K.M.G.G.**

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Abstract

With the increased demand, wild herbal medicinal plants are over exploited from wild populations. Lack of information on seed biology is an impediment in propagation and conservation of these species. Thus, the main aim of the study was to determine the seed germination behavior of eight medicinal plant species from Sri Lanka, assisting their conservation. Seeds were collected from the wet zone of Sri Lanka from at least five individuals from each species. Seed and embryo morphology was recorded. Seed moisture content (SMC) was determined by an oven dry method. Standard hundred seed test was conducted to determine the desiccation sensitivity. Seeds were incubated at 32° and 25° C in light/dark or complete darkness and signs of imbibition were observed. Effect of GA3 and manual scarification on seed germination was studied. Four replicates of at least 12 seeds were used in all experiments. Arcsine transformed data were analysed using one-way ANOVA. Seed size varied from 0.9 to 3.8 cm. Seeds of all the species had fully-developed embryos indicating absence of morphological dormancy. Signs of imbibition were absent in portion of *Entada pusaetha*, *Adenanthera pavonina*, *Cassia fistula*, *Urena sinuata* and *Sida rhombifolia* seeds indicating that they were physically dormant (PY). However, manually scarified *E. pusaetha* seeds have not germinated, indicating the presence of physiological dormancy (PD), i.e., these seeds have combinational dormancy (PY+PD). GA3 treatment, manual scarification +GA3 treatment and warm stratification increased the germination of *Salacia chinensis*, *Calophyllum inophyllum* and *Madhuca longifolia* seeds, respectively indicating that they also have PD. SMC suggested that *S. chinensis*, *E. pusaetha*, *A. pavonina*, *C. fistula*, *U. sinuata* and *S. rhombifolia* seeds have orthodox storage behavior, while the results of the hundred seed method indicated that *C. inophyllum* and *M. longifolia* seeds as recalcitrant and orthodox, respectively. Seed germination pattern of *A. pavonina*, and *S. rhombifolia* after storage suggested a possible occurrence of sensitivity cycling phenomenon. Storage breaks the dormancy of *C. fistula*, *U. sinuata*, *S. rhombifolia* (dry storage) and *A. pavonina* (Wet storage) seeds while GA3 was successful in relieving dormancy of *C. inophyllum* (after scarification), *M. longifolia* and *S. chinensis* seeds.

Keywords: Orthodox, Physical dormancy, Physiological dormancy, Recalcitrant, Seed propagation, Storage behavior