

**FRUIT CHARACTERISTICS AND SEED GERMINATION BEHAVIOR OF
Dillenia indica (DILLENACEAE)**

B. I. Dasanayaka^{1*}, K.M.G.G. Jayasuriya^{1,2} and H.R.N. Jinadasa³

¹Department of Botany, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka

²Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

³Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science,
University of Peradeniya, Peradeniya, Sri Lanka

*bhagya1993920@gmail.com

Dillenia indica is an important medicinal plant native to Sri Lanka having comparatively large fruit containing seeds covered with sticky hyaline mucilage. However, published data are not available on the effect of fruit characteristics and mucilage on the seed germination behavior of *D. indica*. Thus, the present study was conducted to determine the significance of fruit characteristics of *D. indica* on its germination behaviour. Seed germination assay was conducted with and without seed mucilage. Seed storage behavior was identified using the 100 seed test. Antibiotic, antifungal, antioxidant, and allelopathic activities of fruit extracts (with mucilage) were tested using standard biochemical assays. *D. indica* seeds took approximately 70 days to germinate to 95% indicating the presence of seed dormancy. Germination rate increased when seeds were treated with GA₃ or when they were stored dry for one month, suggesting the presence of physiological dormancy in seeds. Seeds are comprised of an underdeveloped embryo that grows inside the seed before the germination. Thus, seeds of *D. indica* have morphophysiological dormancy which clearly differs from previous studies on seed dormancy of *D. indica*. The seed moisture content of *D. indica* was 12.5% and seeds continued to be viable after dry-storage revealing their orthodox storage behavior. Seed mucilage does not affect seed germination. The floating time of seeds with mucilage was at least five times higher than that without mucilage. Fruit-extracts exhibited a significant antibacterial, antifungal, and antioxidant activity. No allelopathic activity of fruit extracts was shown towards the seed germination of *Brassica juncea* and *Vigna radiata*. Seed mucilage appears to be assisting seeds to float on the water during dispersal. Further, antifungal, antibacterial and antioxidant properties of fruit wall and mucilage seem to protect seeds from fungal and bacterial pathogens and other stress conditions during dispersal and stay in the soil seed bank.

Keywords: Antibacterial activity, Antifungal activity, Antioxidant activity, Seed dispersal, Seed dormancy