

**Optimizing Genomic DNA Extraction Protocol for Water Hyacinth and Lotus Plant
Refining Method for Improved Efficiency and Yield.**

Bandara K.R.N.H.¹, Molagoda I.M.N^{1*}.

¹*Department of Bioprocess Technology, Rajarata University of Sri Lanka*

**neelakgm2012@gmail.com*

Polydeoxyribonucleotide (PDRN), composed of Deoxyribonucleic acid (DNA) fragments with molecular weights ranging from 50 to 1,500 kDa, is primarily isolated from the sperm cells of salmon trout or chum salmon. With demonstrated characteristics including bone regeneration, tissue damage prevention, anti-ulcerative, anti-inflammatory, anti-apoptotic, anti-osteoporotic, anti-melanogenetic, anti-allodynic, and wound-healing properties, PDRN has garnered attention in preclinical and clinical investigations. The extraction of PDRN from fish involves sophisticated technologies, incurring inherent expenses. As an alternative to that this study focuses on optimizing the extraction of genomic DNA from water hyacinth and lotus plants to enhance extraction of PDRN molecules. Conventional methods faced challenges in obtaining high-quality genomic DNA due to the complex cellular structures of these plants. Modification of Cetyltrimethylammonium bromide (CTAB) extraction buffer concentrations significantly improved the yield and purity of genomic DNA (Lotus: 1598.3 ng/μl, 1.096 $\Lambda_{260}/\Lambda_{280}$; Water hyacinth: 1777.3 ng/μl, 1.710 $\Lambda_{260}/\Lambda_{280}$). This research not only benefits those studying water hyacinth and lotus plants but also contributes to plant genomics and molecular biology by enhancing PDRN extraction efficiency and advancing genomic DNA extraction methodologies for these two plant species.

Keywords: *Polydeoxyribonucleotide (PDRN), Deoxyribonucleic acid (DNA), Fish sperm cells, Genomic DNA, Water hyacinth, Lotus, CTAB-based extraction buffer*

Acknowledgment: This research was supported by the Science and Technology Human Resource Development Project, Ministry of Higher Education, Sri Lanka, funded by the Asian Development Bank (Grant No. R2RJ4).