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A Study on the Performance and Electrochemistry of Bryophyllum pinnatum Leaf (BPL) Electrochemical Cell MOHAMMAD AL MAMUN, M. I. KHAN, M.H. SARKER, K.A. KHAN, Jagannath University, Dhaka — The study was carried out to investigate on an innovative invention, Pathor Kuchi Leaf (PKL) electrochemical cell, which is fueled with PKL sap of widely available plant called Bryophyllum pinnatum as an energy source for use in PKL battery to generate electricity. This battery, a primary source of electricity, has several order of magnitude longer shelf-lives than the traditional Galvanic cell battery, is still under investigation. In this regard, we have conducted some experiments using various instruments including Atomic Absorption Spectrophotometer (AAS), Ultra-Violet Visible spectrophotometer (UV-Vis), pH meter, Ampere-Volt-Ohm Meter etc. The AAS, UV-Vis and pH metric analysis data provided that the potential and current were produced as the Zn electrode itself acts as reductant while Cu^{2+} and H^{+} ions are behaving as oxidant. The significant influence of secondary salt on current and potential leads to the dissociation of weak organic acids in PKL juice, and subsequent enrichment to the reactant ions by the secondary salt effects. However, the liquid junction potential was not as great as minimized with the opposite transference of organic acid anions and H^{+} ions as their dissimilar ionic mobilities. Moreover, the large value of equilibrium constant (K) implies the big change in Gibbs free energy (ΔG), revealed the additional electrical work in presence of PKL sap. This easily fabricated high performance PKL battery can demonstrate an excellent promise during the off-peak across the country-side.

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