



A Nanotechnological Approach to Improve Oral Antidiabetic Efficacy of Phytochemicals Extracted from *Tinospora Cordifolia*: In-Vivo and Ex-Vivo Studies

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ABSTRACT: Present study demonstrates the designing and development of nanoemulsion based drug delivery system of phytochemicals from *Tinospora Cordifolia* to improve their oral antidiabetic efficacy. Nanoformulations were characterized and extensively investigated for size, morphology, and drug release profile as well as *ex-vivo* permeation studies. Nanodroplet size and zeta potential of nanoformulation were optimized and were found within the range of 60 nm to 180 nm. Raw extract and nanoemulsion loaded with drug releases $79.4 \pm 1.5\%$ and $80.5 \pm 0.9\%$ after 12 h and 24 h respectively. Approximately 6.4 fold enhancement in the value of permeability coefficient of *T. cordifolia* was noticed upon formulating it as nanoemulsion. Nanoformulations were found to improve the intestinal membrane permeability, greater biological stability and sustained release for prolonged period of time and have showed excellent *in-vitro* antioxidant efficacy in compare to control. These formulations were proved to be good candidates for oral drug delivery and can further investigate for *in-vivo* animal experiments. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

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