EXECUTIVE SUMMARY

OF THE

UGC MAJOR RESEARCH PROJECT

ENTITLED

"Isolation and Characterization of immunomodulatory proteins from the Indian pennywort *Centella asiatica* (Linn)"

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"Isolation and Characterization of immunomodulatory proteins from the Indian pennywort *Centella asiatica* (Linn)" Principal Investigator **Dr. Ivan Aranha**

Centella asiatica, widely known as "gotu kola," is a reputed medicinal plant for its various pharmacological effects favourable for human health. Besides its potent wound healing property, a number of studies described the noteworthy protective effect of the plant against several diseases of CNS.

Many research groups have worked with the active components to demonstrate the protective role of *Centella asiatica* (CA) on oxidative stress. However, either there are no reports from India or from outside India showing the proteins from CA having immunomodulatory functions. Thus in the present investigation an attempt has been made to isolate, purify, characterize and demonstrate the immunomodulatory proteins from CA.

The major findings of this project include, evidence for the presence of a 28 kDa acidic, non-glycoprotein in Centella dry leaf powder displaying immunomodulatory activity (mitogenic activity towards murine splenocytes and thymocytes, macrophage activation resulting in Nitric Oxide release, and Phagocytosis), but devoid of Hemagglutination activity (indicating that the protein is non lectin).

The outcomes of immunogenic and adjuvant responses of Centella immunomodulatory protein (ImP) by mucosal (intranasal) administration in terms of the humoral responses (serum IgG and IgA) in BALB/c mice are studied. The results of the study demonstrate that purified Centella ImP at 30µg and 60µg doses shows humoral immune response (serum IgG and IgA increase) in BALB/c mice upon intranasal administration, thus indicating its intrinsic immunogenicity.

In addition, Centella ImP displays humoral adjuvant response for OVA (a model weak antigen) as seen by increased serum anti-OVA IgG and IgA on days 35 and 50 in BALB/c mice. The results indicate that Centella ImP is a strong immunogen by itself and enhances the immunogenicity of mucosally administered antigen in BALB/c mice. Based on the results of this animal study, it appears that Centella ImP shows a potential for future studies in humans.

In conclusion, demonstrated that Centella ImP is an immune system booster and has the potential to be used as a mucosal adjuvant for experimental antigens.