ABSTRACT

Bamboo is considered as a global natural resource and a popular functional food in far eastern countries. It serves as a herbal remediation prominently in Chinese traditional medicine for many disorders. Besides, Sri Lankan traditional medicine utilizes bamboo in traditional prescriptions for many treatment regimens. Therapeutic potential of bamboo has been validated by several researchers though immunomodulatory potential has scarcely evaluated. Thus, the present study investigates *Bambusa vulgaris* the Sri Lankan variety of bamboo for immunomodulatory potential for developing potential drug leads in the future.

The present study evaluates the immunomodulatory potential of fresh juice of *Bambusa vulgaris* young shoots (FJBV) using Wistar rats (N=6/group), orally administered with 3 doses of FJBV - low dose (LD) 40mg/200g, human equivalent dose (HED) 80mg/200g and high dose (HD) 160mg/200g - once daily for 2 consecutive days; distilled water served as the normal control (NC). Cyclophosphamide via oral route served as the positive control (PC: 2mg/200g). Prescribed traditional dose (30ml/day) was used to determine HED.

Nonfunctional and functional immunological parameters elicited a significant immunomodulation with FJBV. The active cell counts of the rat blood were altered accordingly. Lymphocyte to neutrophil ratio was significantly low for ($p<0.05$). Rat platelet counts and bone marrow counts were reduced by all three doses at post-treatment. Among them, significant platelet reduction was observed by HD ($p<0.05$) and for bone marrow by both HED and HD ($p<0.05$). Functional response for phagocytic activity of peritoneal macrophage counts was lowered by FJBV doses and significantly lowered for HED and HD ($p<0.05$). This lowering of the active cell counts over a short period of administration justifies the traditional claim for combating inflammatory response.

The FJBV explicated a least antioxidant effect for both *in vitro* (DPPH radical scavenging assay) and *in vivo* (ABTS, total antioxidant status assay) antioxidant assays. The antioxidant capacity decreased with the increasing concentrations of the of FJBV young shoots. The total antioxidant status of the rat serum for dose HD was significantly low ($p<0.05$).

Acute oral toxicological evaluation of the FJBV challenges the safe administration of fresh juice for a longer period since it was implicated with a nearly significant haematotoxicity, nephrotoxicity, hepatotoxicity and immunotoxicity in bone marrow and splenocyte counts. Chemical characterization revealed the presence of phytochemicals such as reducing sugars, starch, proteins and saponins which may have led to the bioactivities of FJBV young shoots.

The above findings of the present study provided ample verification of the traditional claim and health benefits of the FJBV young shoot as an immunomodulator. The study has discovered a novel bioactivity of *Bambusa vulgaris* aiming to invent a safe immunomodulatory drug leads in quest for human use.