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## Immunomodulatory effects of dietary lectin 'Jacalin' on human peripheral blood mononuclear cells (PBMCs)

Sakaram Seervi and Neesar Ahmed

B S Abdur Rahman University, India

Dietary lectins such as those found in rice, wheat, corn, lentils, etc. are carbohydrate binding proteins that have been shown to possess wide range of biological applications including anticancer, antiviral and antifungal activities. Since monocytes and lymphocytes play a major role in immune response, it is important to study the effects of dietary lectins on the peripheral blood mononuclear cells (PBMCs) to understand their role in immunomodulation. The immunomodulatory effects of lectins from varied sources have been extensively studied and, in some cases, the underlying mechanism unveiled. In the present study, the lectin 'Jacalin' was purified from jackfruit (*Artocarpus integrifolia*) seeds by affinity chromatography and its effects on the PBMCs were analyzed. Jacalin was found to stimulate the proliferation of PBMCs, both in the absence and presence of the specific ligand, galactose thereby it might be possible that jacalin has two distinct binding sites for galactose and PBMCs. While jacalin was shown to be digested by proteinase K, it was found to be resistant to trypsin-EDTA digestion upto a concentration of 400 µg/ml. In addition, 3h of Jacalin treatment resulted in increased mRNA levels of cytokines including IL-1 $\beta$ , IL-6 and IFN- $\gamma$  while the mRNA expression of TGF- $\beta$  was shown to be upregulated in 6h jacalin treated PBMCs. To find the effects of jacalin stimulated immune cells on the cancer cells, we studied the proliferation of HeLa cells treated with conditioned media (CM) from jacalin stimulated and unstimulated PBMCs. A slight decrease in cell proliferation was observed in HeLa cells treated with 24h jacalin treated PBMC CM as compared to the jacalin unstimulated PBMC-CM, thus suggesting jacalin may induce a change in the phenotype of PBMCs.

sakaramsirvi2012@gmail.com