



Cytotoxic Effect of Indian Tobacco Rolls (Bidi) Smoke Extract on Macrophages and its Prevention by Alkaloid Vasicine Obtained From *Adhatoda Vasica*

Mamta Pant, Sujata Basu, Rachana *

Department of Biotechnology, Jaypee Institute of Information Technology, A-10, Sector 62, Noida-201307, Uttar Pradesh, India

Address for Correspondence: Rachana; mamta_m.tech@yahoo.com ; rachana.dr@iitbombay.org

ABSTRACT: Bidi, a form of hand-rolled cigarette is prevalent mostly in rural India. On combustion, during smoking, the tobacco wrapped inside a bidi accounts for generation of tremendous amount of harmful free radicals and carcinogenic chemical which are known to increase oxidative stress causing cell death. The present study is an attempt to investigate the protective effect of antioxidant, anti-inflammatory compound, Vasicine (active compound of *Adhatoda vasica*) against the toxic effects induced by bidi smoke concentrate (BSC) on human macrophages (THP-1 cell line). The effect of BSC, Vasicine, and their combinations on cell viability was analyzed through MTT assay. Vasicine pre-treatment protected the cells against BSC-induced oxidative stress. Further, cells exposed to above treatments were analyzed under inverted microscope and it was observed that, BSC caused a decrease in cell number and cell size, thus affecting the cell viability morphology. Vasicine pre-treatment regained the cell viability comparable to control. Nitric oxide radical scavenging activity assay showed that, BSC treatment increased the nitrite level in cells significantly and, this effect was overcome on pre-treatment of cell with Vasicine. BSC treatment also increased the SOD activity, and Vasicine pre-treatment brought its activity almost near to control. Thus, the strong antioxidant potential of Vasicine is proved through its cytoprotective role on THP-1 cells and, further investigation is required to unveil its molecular mechanism of action. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

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