

## **Formulation and Anticancer Evaluation of Beta-Sitosterol in Henna Methanolic Extract Embedded in Controlled Release Nanocomposite**

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**Abstract :** In the present study, Beta-Sitosterol in Lawsonia methanolic leaf extract embedded in controlled release nanocomposite was prepared and evaluated for in vivo anticancer efficacy in dimethyl hydrazine (DMH) induced colon cancer. In the present study, colon cancer was induced by s.c injection of DMH (20 mg/kg b.wt) for 15 weeks. The animals were divided into five groups as follows control, DMH alone, DMH and Beta Sitosterol nanocomposite (50mg/kg), DMH and Beta Sitosterol nanocomposite (100 mg/kg) and DMH and Standard Silymarin (100mg/kg) and the treatment was carried out for 15 weeks. At the end of the study period, the blood was withdrawn, and serum was separated for haematological, biochemical analysis and tumor markers. Further, the colonic tissue was removed for the estimation of antioxidants and histopathological analysis. The results of the study displays that DMH intoxication elicits altered haematological parameters (RBC,WBC, and Hb), elevated lipid peroxidation and decreased antioxidants level (SOD, CAT, GPX, GST and GSH), elevated lipid profiles (cholesterol and triglycerides), tumor markers (CEA and AFP) and altered colonic tissue histology. Meanwhile, treatment with Beta Sitosterol nanocomposites significantly restored the altered biochemicals parameters in DMH induced colon cancer mediated by its anticancer efficacy. Further, Beta Sitosterol nanocomposite (100 mg/kg) showed marked efficacy.

**Keywords :** nanocomposites, herbal formulation, henna, beta sitosterol, colon cancer, dimethyl hydrazine, antioxidant, lipid peroxidation

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