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**Effect Of D-Glucose - Eugenol Conjugate an Anticancer on Osteosarcoma Cells**

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**ABSTRACT**

Drug Delivery Systems (DDS) have been investigated to improve therapeutic outcomes in cancer treatment. The main goals of DDS are to achieve greater drug concentration towards diseased sites, to bypass drug resistance and minimize toxicities to healthy tissues. DDS are based on two main principles which are passive targeting and active targeting. Passive targeting uses a vehicle, while active targeting uses a specific vector and exploits an increased affinity of the delivery system towards the target tissue components. In this study, D-glucose is used as a vehicle and it is conjugated with eugenol a known herbal natural product to target the cancer cells. Successful confirmation of the conjugation between D-glucose and eugenol was carried out by NMR analysis. To determine the anticancer effect, the osteosarcoma (K7M2) cells were cultured and anti-proliferative test was performed using MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide]. Cultured K7M2 cell viability and toxicity were evaluated by incubating for 24 hours with various concentrations of Eugenol or D-glucose-eugenol. MTT assay results showed dose and time dependent decrease in cell viability and the inhibitory concentration (IC50 value) after 24 hour of incubation was obtained. The IC50 of D-glucose-eugenol was observed at the concentration of 96.2 µg/ml and the decreased cell survival was 48 %. Indeed our findings also indicated that K7M2 cells would be affected by toxicity of D-glucose-eugenol at lower concentration (96.2 µg/ml) compared to Eugenol (135 µg/ml). The present preliminary study clearly suggests that D-glucose-eugenol has high potential to act as an anti-proliferative agent and may form an effective new modality or approach as the future drug delivery system for cancer or chemo-preventive agent in clinical use.