Eugenol

Glioma is the prime cause of cancer allied mortality in adolescent people and it accounts for about 80% of all malignant tumours. Eugenol is a major bioactive constituent present in the essential oils with numerous pharmacological benefits including neuroprotective activity. The major drawback of eugenol is its extreme volatile property and oxygen sensitivity therefore we increased the efficacy of drug; eugenol by encapsulating with chitosan polymer. Eugenol loaded chitosan polymer (EuCs) was characterized using FTIR, XRD, SEM, HR-TEM analysis and the encapsulation, drug release efficacy was assessed at in vitro condition. The induction of autophagy and anticancer efficacy of EuCs on glioma cells was evaluated with rat C6 glioma cells using MTT assay, acridine orange staining, immunocytochemical analysis of NFκβ protein expression and FLOW cytometric analysis. The anti-metastatic property of Eu-CS was assessed by immunoblotting and RT-PCR analysis of epithelial-mesenchymal transition protein expression in EuCs treated rat C6 glioma cells. Our characterization analysis proves that EuCs possess essential physical and functional properties of the copolymer to be utilized as a drug. Further, the MTT analysis and AO staining confirm even in the presence of oncogenic inducer and autophagic inhibitors, EuCs exhibits apoptotic potency on rat C6 glioma cells. The result of immunocytochemical studies depicts the inhibition of NFκβ protein expression and flow cytometry studies confirm apoptosis induction by EuCs. The inhibition of metastasis by EuCs was proven by the decrease in epithelial-mesenchymal transition protein expression in Eu-Cs treated rat C6 glioma cells. Overall this results authentically confirm eugenol loaded chitosan nanopolymer persuasively induces apoptosis and inhibits metastasis in rat C6 glioma cells [1)].

1)
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