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A high mannose concentration is well tolerated by colorectal adenocarcinoma and melanoma cells but toxic to normal human gingival fibroblast : an in vitro investigation (Article) (Open Access)

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Abstract

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Background: The primary cause of cancer is gene mutation which allows the growth of abnormal and damaged cells . Nutrition is one of the key factors that either increases or decreases the risk of cancer. Mannose has been found in many fruits such as oranges, apples and berries. Mannose has been linked to increase the risk factors or potential therapeutic for cancers. However, insufficient information is available on the effects of high mannose concentration on the normal and cancer cell lines. This study aimed to evaluate the viability patterns of human cancer and normal cell lines treated with mannose . Human gingival fibroblast (HGF), skin malignant melanoma (A375) and colorectal adenocarcinoma (HT29) cell lines were cultured and treated with additional mannose in three respective concentrations: 1 mg/ml, 5 mg/ml and 10 mg/ml. Then, cell viability was measured using an MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide)-assay. Results: The HGF cells ' percentage pattern of viability showed a rapid decline of nearly 95% on the third day of treatment. A375 cells were able to survive in high mannose condition as the cell viability percentage was at the highest value on Day 5. Meanwhile, HT29 cells showed declining cell viability pattern when treated with mannose . The data exhibited significance; the p value was less than 0.001. Conclusions: High mannose concentration can be toxic to HGF. In addition, A375 is adaptive to mannose at all concentrations in which it shares the same pattern with the untreated group. However, the cell viability pattern for HT29 cell is declining. © 2020, The Author(s).

SciVal Topic Prominence

Topic: Congenital Disorders of Glycosylation | Phosphomannomutase | Dolichols

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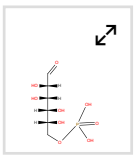
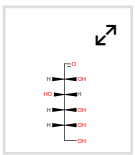
Chemistry database information

Substances

Author keywords

Adenocarcinoma | Cancer | Fibroblasts | In vitro technique | Malignant melanoma | Mannose

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