

Cytotoxic activity of kenaf seed oils from supercritical carbon dioxide fluid extraction towards human colorectal cancer (HT29) cell lines

ABSTRACT

Kenaf (*Hibiscus cannabinus*) from the family Malvaceae, is a valuable fiber plant native to India and Africa and is currently planted as the fourth commercial crop in Malaysia. Kenaf seed oil contains alpha-linolenic acid, phytosterol such as β -sitosterol, vitamin E, and other antioxidants with chemopreventive properties. Kenaf seeds oil (KSO) was from supercritical carbon dioxide extraction fluid (SFE) at 9 different permutations of parameters based on range of pressures from 200 to 600 bars and temperature from 40 to 80°C. They were 200/40, 200/60, 200/80, 400/40, 400/60, 400/80, 600/40, 600/60, and 600/80. Extraction from 9 parameters of KSO-SFE was screened for cytotoxicity towards human colorectal cancer cell lines (HT29) and mouse embryonic fibroblast (NIH/3T3) cell lines using MTS assay. KSO-SFE at 600/40 showed the strongest cytotoxicity towards HT29 with IC₅₀ of 200 μ g/mL. The IC₅₀ for NIH/3T3 was not detected even at highest concentration employed. Cell cycle analysis showed a significant increase in the accumulation of KSO-SFE-treated cells at sub-G1 phase, indicating the induction of apoptosis by KSO-SFE. Further apoptosis induction was confirmed by Annexin V/PI and AO/PI staining.

Keyword: Kenaf seeds oils; Colorectal cancer; Cytotoxic agent; Vegetable oil