

Effects of cola nut (*Cola nitida*) on the apoptotic cell of human breast carcinoma cell lines.

ABSTRACT

The cola nut (*Cola nitida*) tree is native to West Africa. It has been naturalized to South America, Central America, the West Indies, Sri Lanka, and Malaysia. Related to cocoa, cola nut is the source of a stimulant, and contains the polyphenolic compounds (including catechin, epicatechin, tannins, and 'Kola red') and the methylxanthine alkaloids that also occur in coffee, cocoa, and tea. Previous study has been shown the potential anticarcinogenic effect of cola nut extract on human breast cancer cell lines, MCF-7. This study was conducted to determine their mechanism of action through the apoptotic cell approach. The effect of cola nut extract on the apoptotic cell of MCF7 cells was determined by flow cytometric analysis. MCF7 cells were treated with 60 and 80 $\mu\text{g/ml}$ of cola nut extract for 24 h and subjected to FACS analysis. MCF7 cells treated with 60 $\mu\text{g/ml}$ cola nut extract showed an increase of 6.55% in population of apoptotic cells with a concomitant decrease in the percentage of cells in the S and G2/M phase of cell cycle compared to DMSO-treated control cells. Similarly, MCF7 cells treated with 80 $\mu\text{g/ml}$ cola nut extract showed an increase of 8.29% in population of apoptotic cells with a concomitant decrease in the percentage of cells in the S and G2/M phase of cell cycle compared to DMSO-treated control cells. This suggests that cola nut treatment induces apoptosis at 24 h. In conclusion, cola nut extract may induce apoptosis in MCF-7 cell lines.

Keyword: Cola nut; Breast cancer; Apoptotic cell.