

[Eur J Cancer Prev.](#) 2006 Aug;15(4):353-61.

In-vitro effects of polyphenols from cocoa and beta-sitosterol on the growth of human prostate cancer and normal cells.

[Jourdain C](#), [Tenca G](#), [Deguercy A](#), [Troplin P](#), [Poelman D](#).

BIOAlternatives, Gençay, France. cjo@bioalternatives.com

Abstract

Cocoa contains many different types of physiologically active components. It was shown that cocoa beans are rich in specific antioxidants such as flavonoids, catechins, epicatechins and proanthocyanidins. Additionally, beta-sitosterol, the most common phytosterol, may play a protective role in the development of cancer. The aim of this in-vitro study was to evaluate the inhibitory effect of different cocoa polyphenols extracts, alone or combined with beta-sitosterol, on two human prostate cancer cell lines (nonmetastatic 22Rv1 cells and metastatic DU145 cells) and a normal human prostate cell line (RWEP-1). A synergy between beta-sitosterol and cocoa polyphenols extract was also researched. Cells were treated independently with five products from 1 to 72 h: (1/) synthetic beta-sitosterol, (2/) a cocoa polyphenols extract supplemented with beta-sitosterol, (3/) three different cocoa polyphenols extracts naturally containing beta-sitosterol. In the experiment, beta-sitosterol was tested from 10⁽⁻⁶⁾ to 10⁽⁻³⁾%; cocoa polyphenols extract supplementation was with 0.72% beta-sitosterol; finally cocoa polyphenols extracts were added to the cells at very low concentrations ranging from 0.001 to 0.2%. The growth and viability of cells were measured using colorimetric assay at 1, 3, 6, 24, 48 and 72 h of treatment. IC₅₀ and IC₁₀₀ corresponding to the concentration leading to a decrease of 50% and 100% of cell growth were determined. At the highest tested concentration, cocoa polyphenols extracts induced a complete inhibition of growth of metastatic and nonmetastatic cancer cell lines. In addition, cocoa polyphenols extracts were more active against local cancer cells than against metastatic cells. Moreover, at the highest tested concentration, cocoa polyphenols extracts are not effective on a normal prostate cell lines. Beta-sitosterol induced low growth inhibition of both cancer cell line. Cocoa polyphenols extracts, however, were significantly more active and showed a strong and fast inhibition of cell growth than beta-sitosterol alone. No synergy or addition was observed when beta-sitosterol was tested together with the cocoa polyphenols extract. Our results show that cocoa polyphenols extracts have an antiproliferative effect on prostate cancer cell growth but not on normal cells, at the highest tested concentration.

PMID: 16835506 [PubMed - indexed for MEDLINE]