

Antioxidant and Cytotoxicity effect of rice Bran Phytic Acid as an anticancer agent on ovarian, breast and liver cancer cell lines.

ABSTRACT

Introduction: Phytic acid (PA) has been shown to have positive nutritional benefits. There are also claims that it is able to prevent cancer through its antioxidant capability. This study investigated antioxidant activity and cytotoxic effect of PA extracted from rice bran against selected cancer cell lines (i.e. ovarian, breast and liver cancer). **Methods:** Cytotoxicity activity of PA was investigated using MTS [3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)]-2H-tetrazolium, inner salt] assay while the antioxidant activity of PA extract, commercial PA and butylated hydroxytoluene (BHT) was determined by using five different assays: ferric thiocyanate (FTC) and thiobarbituric acid (TBA) assay, β -carotene bleaching method, DPPH radical scavenging assay and ferric reducing antioxidant power (FRAP) assay. **Results:** PA extracted from rice bran induced marked growth inhibition in ovary, breast and liver cancer cells with 50% growth inhibition concentration (IC₅₀) values of 3.45, 3.78 and 1.66 mM, respectively but exhibited no sensitivity towards a normal cell line (3T3). The PA extract was also found to exert antioxidant activity when tested using the FTC, TBA, FRAP and β -carotene bleaching methods but antioxidant activity could not be attributed to scavenging free radical species as measured by DPPH radical scavenging assay. **Conclusion:** The PA extract from rice bran displayed safe and promising anticancer properties in selected cancer cell lines and it is believed that its antioxidant capability is the likely contributor to the observed anticancer properties.

Keyword: Anti-cancer; Antioxidant; Antioxidant; Phytic acid; Rice bran.