Cytotoxicity of Crude Proanthocyanidin Extract from Purple Glutinous Rice Bran (Oryza sativa L.) (Kum Doi Saket) Compared with Cyanidin 3-Glucoside on X63 Myeloma Cancer Cell Lines

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ABSTRACT

Proanthocyanidin and other phenolic compounds may potentially reduce the risk of cardiovascular diseases and cancer, as well as having antioxidant, anti-inflammatory and chemoprotective properties. Proanthocyanidin (PA) and cyanidin 3-glucoside (C3G), a polyphenolic compound of purple color found in purple glutinous rice (Oryza sativa L.), may also manifest these positive effects. This research evaluated the effect of PA and C3G on X63, a mouse-plasma cancer cell line of myeloma cells. PA and C3G were extracted from the purple rice bran of a local, Thailand, purple, rice genotype (Kum Doi Saket). The results showed that the amount of C3G extract from the rice genotype was 54.47 mg/100 g rice bran. The cytotoxicity of the crude PA extract was demonstrated by a dose-dependent decrease in the percentage cell viability of the control in the PA group. A significant difference (p<0.05) began at 100 µg/ml and IC₅₀ occurred at 62.29 µg/ml. The C3G extract also exhibited a dose-dependent decrease, but the significant difference (p<0.05) began at 10 µM and IC₅₀ occurred at 8.4 µM. This research demonstrated a dose-related cytotoxic effect on cancer cells by the crude PA and C3G extracts from purple glutinous rice. The results indicated the benefit of the purple rice genotypes as a functional food with potential anticancer properties.

Key words: cytotoxicity, proanthocyanidin, cyanidin 3-glucoside, purple glutinous rice

INTRODUCTION

Proanthocyanidins are high-molecular-weight polymers comprised of the monomeric unit flavan-3-ol. Proanthocyanidins have been reported to have antibacterial, antiviral, anticarcinogenic, anti-inflammatory, anti-allergic and vasodilatory actions (Anne, 2000). In vivo studies have shown grape seed proanthocyanidin extract is a better free-radical scavenger and inhibitor of oxidative

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