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Purple waxy corn extracts reduced toxicity in AFB1-induced HepG2 Cell line

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Aflatoxin B1 (AFB1) is one of the most contaminant mycotoxins in agricultural products, causing oxidative stress and associating with hepatocellular carcinoma. Previous studies suggested that purple waxy corn (*Zea may L.*) extracts (PCE) contained antioxidant activity and induced phase II activity which related to the detoxified mechanism of AFB1. However, it has no previous study investigated the effects of purple waxy corn on AFB1-induced toxicity. This study aimed to determine the effects of PCE from three parts including cob, seed and boiled seed water on cell viability, oxidative stress and the activity of phase II detoxification enzyme in AFB1-induced HepG2 cell line. We found the phenolic content (187.15 - 341.65 µg Gallic acid/mg), flavonoid content (0.55- 21.35 µg Quercetin/mg) and anthocyanin content (43.70- 220.43 mg Cyanidin-3-glucoside/L) of different PCE (i.e cob, seed and water extractant). The antioxidant activities were measured by ORAC (1410.70- 2214.49 µM Trolox/mg) and FRAP (292.38- 612.38µM Trolox/mg). There were significant correlations between phenolic, flavonoid and anthocyanin content and antioxidant activities ($R= 0.740-0.778$; $P<0.05$). The co-treatment of 0.01-1 mg/ml PCE and AFB1 significantly inhibited toxicity by increasing cell viability ($p<0.05$) and reducing the production of intracellular reactive oxygen species (ROS) in a dose-dependent decrease with EC50 in a range from 0.231 to 0.581 mg/ml. In addition, PCE also significantly increased the glutathione content and glutathione-s-transferase (GST) activity ($p<0.05$) with dose-dependent manner. Therefore, the PCE may reduce the AFB1-induced toxicity in HepG2 and increase cell viability through decrease of intracellular ROS production, and increase glutathione content and GST activity.

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