

## **Cytotoxic effects of some Sri Lankan traditional red rice (*Oryza sativa* L.) brans against human cervical cancer cell line**

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Cervical cancer is the third most commonly diagnosed cancer in women worldwide in 2008 and it is one of the most commonly diagnosed cancers in Sri Lanka. Rice is the dietary staple for Sri Lankans and country harbors many traditional rice varieties (RV). Rice bran is the by-product of rice milling process and reported to have bioactive compounds with anti-cancer properties. However, as yet, no anti-cancer evaluation studies reported in the country on these traditional RV. Present study evaluates the cytotoxicity of brans of some Sri Lankan traditional red RV against human cervical cancer cell line. Seventy % rice bran ethanolic extracts (RBEE) and rice bran protein hydrolysates (RBPH) of Masuran, Dik Wee, Goda Heeneti and Sudu Heeneti were used in this study. Initially RBEE and RBPH were screened at 250 µg/ml (n=3) against human cervical cancer cell line HeLa using sulforhodamine-B cytotoxicity assay. Then, RBEE were further studied using different concentrations (15.6, 31.2, 62.5, 125, 250 µg/ml) to study the dose response relationship (n=6). Screening results revealed that RBEE with significant ( $P < 0.05$ ) cytotoxicity compared to RBPH. The % net growth varied from  $-48.02 \pm 1.69$  to  $14.04 \pm 1.87$  and  $57.31 \pm 2.73$  to  $74.83 \pm 4.71$  respectively for RBEE and RBPH. The results of dose response studies revealed a significant ( $P < 0.05$ ) and dose dependent relationship among brans of different varieties. The RBEE of Sudu Heenti had the highest cytotoxicity while bran extract of Goda heenti had the lowest cytotoxicity. The GI<sub>50</sub> (50 % growth inhibition) values for Sudu Heeneti, Masuran, Dik Wee and Goda Heeneti were  $19.24 \pm 3.47$ ,  $47.60 \pm 1.47$ ,  $69.02 \pm 5.36$  and  $112.58 \pm 0.05$  µg/ml respectively. However, brans of all the varieties tested in this study had low cytotoxicity compared to the positive control (Doxorubicin:  $0.35 \pm 0.02$  µg/ml). In conclusion rice RBEE are more potent compared to RBPH and brans of Sudu Heeneti had the highest activity against cervical cancer.