Crude Extraction of Amana edulis Induces Liver Cancer Apoptosis

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HCC has become the fastest-rising cause of cancer-related death. A novel therapeutic approach for treatment is warranted. The goal of this study is to find effective components from Chinese herbal medicines, which is an important alternative source of anti-cancer medicines. To this end, six different herbs were selected from various traditional literatures. Then, Soxhlet extractor was used to distill the strong polar and weak polar components of each herb. The inhibitive effect of each component was determined using liver cancer cells BEL7404. From total of 12 extractions, it was found that the combined crude lysate of Amana Edulis from water and ethanol system had the best efficacy. At the concentration of 0.1 mg/mL, this component has a highest inhibition rate up to 70%. To investigate the potential molecular reasons, we observed that the component can significantly induce the liver cancer cells apoptosis and retard the cell reproduction at G2/M stage. Verification experiments showed that this component also has apparent inhibitive effects on other liver cancer cells, such as HepG2 and Huh7. On the other hand, it has less effectiveness on another cell line HepaRG, which retains many characteristics of primary human hepatocytes. The results suggested that there might be highly efficient anti-hepatoma ingredient in the water and ethanol extraction of Amana Edulis. The pure substances remain to be isolated and further research on their targets are required. Keywords: Chinese herbal medicine; Amana edulis; Apoptosis; Liver cancer

Awards Won:

Intel ISEF Best of Category Award of $5,000

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