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Study the effect of PVP and *S. costus* extract on white mice

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by

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Abstract:

Saussurea costus (Sc) plant belongs to the Asteraceae family. It contains various bioactive compounds used traditionally in treating multiple diseases. This study intends to determine effect of Polyvinyl pyrrolidone K-30 (PVP) and extract of Sc roots (Scrs) on mice. S. costus roots were purchased from the herbal market and the chemical compositions, including protein, lipid, carbohydrates, moisture, and ash, were determined according to AOAC procedures 2016 with some modifications. HPLC and amino acids analyzer were used to determine the phenolic compounds and amino acid composition of S. costus roots extract (ScrsE).

The antibacterial activities of S. costus roots extract were done according to the Kirby-Bauer disc diffusion method and reveal efficiency of Saussurea costus (root extract) against cancer induced by Polyvinyl pyrrolidone K-30 (PVP) in experimental animals (mice). sixty mice were randomly divided into eight groups (G1, control group; G2, S. costus extract group; G3, cancer induced group; G4, cancer induced + chemotherapy; G5, chemotherapy; G6, cancer induced+ S.costus extract low dose; G7, cancer induced+ S.costus extract moderate dose; G8, cancer induced+ S.costus extract high dose).

The S. costus roots were revealed a fusiform (or) conical and tapering appearance, collapsing in center with longitudinal wrinkles revealing 11-19 cm and 1-2.5 cm for long and wide, respectively. The extraction yield was 9.52% and the weight of the concentrated crude extract was 10 g. According to Proximate analysis, the S. costus roots extract showed 3.35% and 20.39% moisture and ash contents, respectively. The compositions of carbohydrates, protein, and crude fat were 71.25%, 2.51%, and 1.85%, respectively.

HPLC analysis showed that the S. costus roots Extract contained two phenolic acids and two flavonoids. Moreover, twelve amino acids were determined for the first time in the S. costus roots extract.

Liver and kidney samples were collected from all mice during different experiment periods. Samples were kept in 10% buffered formalin and sent for routine histological processing. No abnormal histological features were seen in all liver and kidney sections from the control and other mice groups before various treatments. Diverse

histopathological changes were seen in mice in various treatment groups compared to the control group. Moreover, various histological features were seen in low, moderate, and high-dose Sc-RE treatment groups, accompanied by regeneration related to the treatment dose. Severe damage and histopathological changes were seen in the chemotherapy-treated group and mice suffering from cancer without treatment. The results of this study also revealed variation in serum liver enzyme values between treatment groups. The values of ALT, AST, ALP (U/L) evaluation in control groups were 29.01±1.8, 87.55±2.9 and 98.12±8.8 respectively, however a significant variations was seen between all treatment groups in compare to control values.