SUMMARY AND CONCLUSIONS
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Myriad number of intercalated factors play a pivotal role in maintaining normal physiological conditions. Malfunctioning of any one of these might result in pathophysiological conditions, which is deleterious to life. Cancer as a diseased state is one such a culmination of more than a factor, wherein the normal cells are irreversibly converted to a state where the neoplastic cells loose the potential to control the proliferation. Some of these factors are either toxic electrophiles generated endogenously or xenobiotics to which one is exposed. Cellular system, however, are equipped with detoxification systems, among which GSTs constitutes a primary pathway. Pre-clinical studies have correlated enhanced metabolism of electrophiles with increased levels of GST isoenzymes within various tissues. Expression of GSTs in an individual can therefore provide an indicator about the metabolic potential of their tissues and possible deficiencies in the susceptibility to dietary or environmental carcinogens. GSTs are over expressed in certain tumor types, therefore measurement of GST and their subunits in serum or in pathological specimens can be used as diagnostic markers for certain types of cancer. Also over expression of GSTs have been implicated for the development of drug resistance during the course of treatment of cancers. Therefore, measurement of GSTs can be used to follow the course of disease and to monitor the success of intervention.

Testicular cancer is the most common form of cancer among males of age 15 to 44. After motor vehicle accidents and suicide, cancer is the leading cause of death in this age group, followed by homicide, heart disease, and HIV. Testicular cancer is known as the young man's cancer. Early detection is the key to survival. Testicular cancer has a very fast onset since the tumors can be very aggressive.

Tumor markers are substances that can be detected in higher than normal amounts in the blood, urine, or body tissues of some people with certain types of cancer. A tumor marker may be produced by the tumor itself, or by the body in response to a cancer presence. When diagnosing cancer, blood and pieces of tumor tissue are tested, these tests help to determine the characteristics of the tumor (aggressiveness, rate of growth, and degree of abnormality).
The human beings are used to expose to various chemicals either directly in factories or indirectly in streets and fields. The chemicals entering into the biological systems are either degraded, or modified and gets involved in modification of the existing metabolism. The present study is aimed to reveal the effect of selected chemical toxicant acrylamide on the mice kidney and testicular GSTs and also to study the impact of active principle of Hybanthus enneaspermus.

The salient findings of the present study are summarized below.

Mice kidney and testicular GSTs were purified to electrophoretic homogeneity by GSH-Affinity chromatography. SDS-PAGE of affinity purified cytosolic kidney GSTs resolved into two bands with relative molecular weights of 27.5(Yc) and 26.3(Yb) in kDa and testis GSTs resolved into four bands with relative molecular weights of 27.5(Yc), 26.3(Yb), 26.0(Yβ) and 24.8(Yδ) in kDa.

In order to understand the role of GSTs on exposure to AC with different intervals and concentrations, GSTs were purified to electrophoretic homogeneity and the results were compared. These studies revealed that α-class GSTs(Yc) and μ-class GSTs (Yb) are expressed predominantly both in kidney and testis AC treatments. Further the substrate specificity studies also revealed the elevation of α and μ-class GSTs.

Polyclonal antibodies were raised in rabbits against affinity purified kidney and testis GSTs. Using Western-blot analysis with class specific polyclonal antibodies (kidney and testis) with various concentrations of acrylamide treated kidney and testis cytosols showed induced expression of Yc and Yb subunits.

The substrate specificity studies, purification studies, immunological studies and histopathological studies correlate with the degenerative changes occurred in kidney and testicular tissue after treatment with acrylamide. Induction of GST enzymes in kidney and testis by AC may be due to long-term retention of the carcinogen in the body.
Severity of histological lesions had been observed in 48 hours and 72 hours interval and mice making them less fit for better survival. With 48 hours and 72 interval dosage of acrylamide, kidney and testis showed aggravated histopathological conditions which was found to be lethal. However the plant product on histopathological analysis revealed that it was able to reduce the damage to kidney and testis.

Contrast to potent carcinogenic substances like AC caused deleterious effects at lower concentration and caused ill effects only in very high concentration.

At lethal doses of acrylamide (4 mg) the concentration of the enzyme was elevated. The quantitation of subunits in both control and treated tissue of testis on immunochemical analysis, and also by enzymatic assays in a dose-dependent manner, revealed that Yc Yb1,Yb2, and Y6,subunits of the α,μ and π class were expressed predominantly. The present study suggests that the induction of the above mentioned subunits on AC treatment plays a role in the multi drug resistance mechanism, and that these subunits serves as a markers of neoplasia. Certain tumor markers are simply more accurate than others in their sensitivity to detection of cancer. The more sensitive they are, the earlier it is possible to diagnose. At different concentrations using acrylamide at various conditions as the levels of GSTs were elevated, it may be suggested that GSTs may be used as tumor markers for testicular carcinoma.