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Comparative phytochemical and brine shrimp lethality assay of extracts of fruit and leaf of Ziziphus mauritiana plant

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Abstract

Different plants may contain varying amount of phytochemical and also different degrees of toxicity. This study aimed at evaluating the phytochemical present in the leaf and fruit of Ziziphus mauritiana plant and their toxic effects using brine shrimp lethality assay. The yield obtained after exhaustive maceration of the plant parts revealed aqueous with the highest yield and ethanol with the lowest yield in leaf and ethylacetate extract in fruit. The phytochemical screening revealed absence saponins and glycoside in the leaf ethylacetate extract and anthraquinone in the all the extracts screened also absence of triterpenes in aqueous and ethanol extract and flavonoid in ethylacetate extract while anthraquinone is absent in all the extract of the fruit mesocarp. Brine shrimp lethality assay revealed ethanol extract to be most toxic for both plant parts (fruit and leaf extracts) while aqueous extracts are the least toxic. The result may indicate that the ethanol extract of the plant may contain phytochemical which maybe toxic.

Introduction

Ziziphus mauritiana, also referred to as jujube, Chinese apple, Indian plum, Indian jujube and dunks could be a tropical fruit tree species belonging to the family Rhamnaceae. Ziziphus mauritiana thorny bristly, evergreen shrub or small tree up to fifteen m high with trunk 40 cm or more in diameter; spreading crown; stipular spines and lots of drooping branches. The fruit is of variable form and size. It can be oval, obovate, rectangular or spherical, and can be 1-2.5 in (2.5-6.25 cm) long, depending on the range. The flesh is white and crisp. when slightly underipe, this fruit could be a bit juicy and incorporates a pleasant aroma. The fruit's skin is sleek, glossy, thin but tight. The species is believed to have originated in Indo-Malaysian region of South-East Asia. it's currently wide planted throughout the old World tropics from Southern continent through the center East to the Indian landmass and China, Indomalaya, and into australasia and therefore the Pacific Islands. It will form dense stands and become invasive in some areas, including state and Australia and has become a serious environmental weed in Northern Australia. It is an invasive tree with a medium lifetime, which will quickly reach up to 10-40 foot (3 to twelve m) tall.

Experiment

Brine shrimp lethality bioassay could be a simple, high throughput toxicity check of bioactive chemicals. It is supported the killing ability of test compounds on a simple zoological organism-brine shrimp (Artemia salina). This assay was 1st planned by michael et al., and further developed by many groups. The branchiopod crustacean unwholesomeness bioassay is wide utilized in the analysis of toxicity of significant metals, pesticides, medicines particularly natural plant extracts and etc. it is a preliminary toxicity screen for any experiments on class animal models. One vital side of this assay is that the solvent utilized in this assay could offer false positive signals because of the toxicity of the solvent itself. It is been well-known that some organic solvent and detergents have high cytotoxcity in vivo. A scientific study on however high concentration of solvent affects the results from branchiopod crustacean unwholesomeness bioassay and steerage for optimum operating concentration of solvents is required. The article printed during this issue "Interference from unremarkably used solvents within the outcomes of A. Salina unwholesomeness Test" fills this gap alright. During this study, the authors tested the solvent toxicity result on branchiopod crustacean through an experiment. This is often an awfully important study. The authors ended that dimethyl sulfoxide (DMSO) could be a safer solvent in branchiopod crustacean unwholesomeness bioassay and therefore the most operating concentration of solvents like DMSO, methyl alcohol and Tween twenty was instructed. One conclusion from this text is that Tween twenty showed the foremost toxicity in branchiopod crustacean unwholesomeness bioassay. Tween twenty could be a detergent, which may facilitate to dissolve natural product contains oil. Detergents have long alkyl group chains and soluble purposeful teams. Therefore area unit | they're } soluble and are able to dissolve hydrophobic compounds with their alkyl group chains. They are referred to as surface-acting agents. usually used detergents embody atomic number 11 dodecyl sulphate, Tween 20, CHAPS and etc., however these detergents square measure generally cytotoxic in vitro and in vivo. They could denature proteins and inhibit biological processes. Thus to beat this downside, it's vital to get new detergents with lower toxicity for branchiopod crustacean unwholesomeness bioassay and different bioassays. New low toxicity surface-acting agents were developed within the past many decades. One among them is Nikkol. It's been utilized in a membrane supermolecule analysis during which the proteins were dissolved with the assistance of Nikkol, however still maintains a native-like state. Nikkol could be a nonionic detergent and showed low toxicity. This might be a promising new solvent are often utilized in branchiopod crustacean unwholesomeness bioassay. Another side of branchiopod crustacean unwholesomeness bioassay is that the correct style of experiments. As several different medical researches, organic chemicals square measure usually used as drug vehicles or carriers in branchiopod crustacean unwholesomeness bioassay. However, these compounds typically have toxicity or perhaps the pleiotropy in vitro or in vivo. Therefore researches should remember of their fascinating or undesirable effects and correct management experiments ought to be rigorously designed. Otherwise, bias could have introduced in bioassays and results of solvent are often attributed to the tested medication incorrectly. In branchiopod crustacean unwholesomeness bioassay, each positive and negative will be ought to be designed. Particularly the negative cluster, that ought to contain the same proportion of solvent as within the check teams, ought to be planed rigorously. Therefore the result of the solvent solely ought to be subtracted from the check information. In summary, solvent could be a vital player in branchiopod crustacean unwholesomeness bioassay. The most operating concentration of solvents in branchiopod crustacean unwholesomeness bioassay contributes considerably to the sector. Development of latest solvents and detergents and punctiliously style of experiments also will improve this assay greatly.