the problem and review of related literature and sudies essay sample

Science, Chemistry

Introduction

Everyone is naturally pre-determined to have an offspring. This would just exist in a relationship of a man and woman. It is not always true in a relationship if there is a new life that will be formed. Several factors may contribute to the hindrances in the formation of new life especially to man because male (sperm) gamete is the one responsible to initiate fertilization, the union of male (sperm) and female (ovum) gametes. These may include low sperm counts, poor sperm quality, anatomical problems and hormonal imbalances. These factors were also described under male infertility which leads to inability to produce offspring. Pre-fabricated drugs to treat this are readily available in the market, but it is associated with some undesirable effects.

Talahib (Saccharum spontaneum) is one of the most abundant plants found in the Philippines especially in open areas. The different parts of talahib are pharmaceutically used as diuretic, poultice, purgative, astringent and emollient. It is also found to be an aphrodisiac that has an effect to arouse sexual desire which may resemble to boost fertility. The researchers aim to prove the effectiveness of ethanolic extract of talahib on spermatocyte proliferation in male rabbit (Oryctolagus cuniculus). The leaves of talahib will be used in this experiment. The researchers will also conduct phytochemical screening for the determination of the different chemical constituents present in the talahib leaves.

Thus, if the ethanolic extract of talahib leaves will be proven effective, it would be beneficial to those couple who desires to have an offspring most

especially to male which is the focused of this study on spermatocyte proliferation.

Statement of the Problem

This study deals with the determination of the efficacy of ethanolic extract of talahib leaves on spermatocyte proliferation. Specifically, the study aims to answer the... Botany Talahib is a coarse, erect, perennial grass, usually more or less tufted, with stout underground rootstock, growing to a height of 1 to 3. 5 meters. Leaves are harsh and linear, 0. 5 to 1 meter long; 6 to 15 millimeters wide. Pannicles are white and erect, measuring 15 to 30 centimeters long, with slender and whorled branches, the joints covered with soft white hair. Spikelets are about 3. 5 millimeters long, much shorter than the copious, long, white hairs at the base. Distribution

– In open areas at low and medium altitudes, ascending to 1, 500 meters, often gregarious, occupying large areas throughout the Philippines. – Also occurs from India to southern China and through Malaya to Polynesia. Constituents

– Phytochemical screening yielded quinones, terpenes, alkaloids, flavonoids, saponins, tannins, carbohydrates, protein, coumarin, phenol, steroids and glycosides. – Various root extracts yielded terpenoids, steroids, glycosides, tannins, flavonoids, carbohydrates. Properties

– In Ayurveda, roots are considered sweet, astringent, emollient, refrigerant, diuretic, lithotriptic, purgative, tonic, aphrodisiac.

Parts used

Roots and stems.

Uses

Folkloric

– In the Philippines decoction of the roots used as a diuretic. – Decoction of roots used for fever.

– Warmed poultice of the stem pulp applied to painful areas in the leg and in cases suffering from beri beri. – In Pakistan, used as laxative, phthisis, burning sensations and disease of the blood. – In Ayurveda, used for dyspepsia, piles, sexual weakness, respiratory problems and gynecological troubles. – In Bengal, roots used as galactagogue and diuretic.

– In India, fresh juice of stems used to treat mental illness and mental disturbances by the vaidhiyars. – In Siddha, the whole plant is used for diseases of vatam and pittam, vomiting and various abdominal disorders, mental diseases, dyspnea, anemia and obesity. In Uttar Pradesh, paste prepared from equal quantities of fresh roots of Cynodon dactylon and Saccharum sponataneum is given with cow’s milk and sugar for leucorrhea, early morning for one month.

Studies

• Phytochemicals: Screening yielded the presence of quinines, alkaloids, tannins, carbohydrates, protein, coumarin, phenol, steroid and glycosides. • CNS Depressant / Antipsychotic Activity: Study in rats showed reduction in motor activity, more pronounced in the ethanol and aqueous extracts. The aqueous extracts showed mild antipsychotic activity. The

psychopharmacologic effects were attributed to the alklaloids, tannins, steroids and glycosides. • Antimicrobial / Cytotoxic / Antioxidant: Chloroform extract showed antioxidant activity with IC50 value of 51. 04 ug/ml (vs ascorbic acid 41. 04). Crude extract showed cytotoxic activity using Brine shrimp lethality assay with LC50 of 6. 63 ug. mL (vincristin 10. 64). Antimicrobial activity was exhibited against gram-positive and gram-negative pathogenic bacteria and against three tested fungi.

• Antimicrobial / Trinpanchmool / Herbal Combination: Study on the antimicrobial activity of trinpanchmool drugs – a combination of Kush (Desmotachya bipinnata), Darbh (Imperata cylindrica) and Kas (Saccharum spontaneum) showed promising antimicrobial activity against different microorganisms (gram-positive, gram negative and fungal strains). The drugs in coombination were more active than individual extracts. • Pulp and Paper Making: Study showed S. spontaneum is a bulky material with lower extractives and lignin content and higher holocellulose content with a good response towards multistage bleaching sequence and a pulp of high brightness ceiling. • Cellulase Production: Study showed S. spontaneum can be utilized as a substrate in solid state fermentation for economic production of cellulase. Cellulases are the third largest industrial enzyme in the world. • Antioxidant Activity: Study of extracts of S. spontaneum roots showed antioxidant activity similar to standard drugs used in the experiment. Methanolic extracts showed higher phenolic and flavonoid content. Alkaloid

From Wikipedia, the free encyclopedia

This article is about the class of chemical compounds. For the pharmaceutical company, see Alkaloid (company).

The first individual alkaloid, morphine, was isolated in 1804 from poppy (Papaver somniferum).[1] Alkaloids are a group of naturally occurring chemical compounds that contain mostly basic nitrogen atoms. This group also includes some related compounds with neutral[2] and even weakly acidic properties.[3] Some synthetic compounds of similar structure are also attributed to alkaloids.[4] In addition to carbon, hydrogen and nitrogen, alkaloids may also contain oxygen, sulfur and more rarely other elements such as chlorine, bromine, and phosphorus.[5] Alkaloids are produced by a large variety of organisms, including bacteria, fungi, plants, and animals, and are part of the group of natural products (also called secondary metabolites).

Many alkaloids can be purified from crude extracts by acid-base extraction. Many alkaloids are toxic to other organisms. They often have pharmacological effects and are used as medications, as recreational drugs, or in entheogenic rituals. Examples are the local anesthetic and stimulant cocaine, the psychedelic psilocin, the stimulant caffeine, nicotine,[6] the analgesic morphine, the antibacterial berberine, the anticancer compound vincristine, the antihypertension agent reserpine, the cholinomimetic galantamine, the anticholinergic agent atropine, the vasodilator vincamine, the antiarrhythmia compound quinidine, the antiasthma therapeutic ephedrine, and the antimalarial drug quinine.

Although alkaloids act on a diversity of metabolic systems in humans and other animals, they almost uniformly invoke a bitter taste.[7] The boundary between alkaloids and other nitrogen-containing natural compounds is not clear-cut.[8] Compounds like amino acid peptides, proteins, nucleotides, nucleic acid, amines, and antibiotics are usually not called alkaloids.[2] Natural compounds containing nitrogen in the exocyclic position (mescaline, serotonin, dopamine, etc.) are usually attributed to amines rather than alkaloids.[9] Some authors, however, consider alkaloids a special case of amines.[10][11][12] Extraction

Crystals of piperine extracted from black pepper.
Because of the structural diversity of alkaloids, there is no single method of their extraction from natural raw materials.[165] Most methods exploit the property of most alkaloids to be soluble in organic solvents but not in water, and the opposite tendency of their salts. Most plants contain several alkaloids. Their mixture is extracted first and then individual alkaloids are separated.[166] Plants are thoroughly ground before extraction.[165][167] Most alkaloids are present in the raw plants in the form of salts of organic acids.[165] The extracted alkaloids may remain salts or change into bases.[166] Base extraction is achieved by processing the raw material with alkaline solutions and extracting the alkaloid bases with organic solvents, such as 1, 2-dichloroethane, chloroform, diethyl ether or benzene.

Then, the impurities are dissolved by weak acids; this converts alkaloid bases into salts that are washed away with water. If necessary, an aqueous solution of alkaloid salts is again made alkaline and treated with an organic

solvent. The process is repeated until the desired purity is achieved. In the acidic extraction, the raw plant material is processed by a weak acidic solution (e. g., acetic acid in water, ethanol, or methanol). A base is then added to convert alkaloids to basic forms that are extracted with organic solvent (if the extraction was performed with alcohol, it is removed first, and the remainder is dissolved in water). The solution is purified as described above.[165][168] Alkaloids are separated from their mixture using their different solubility in certain solvents and different reactivity with certain reagents or by distillation.[169] Abstract

The determination of the medicinal values of some plants is due to the presence of some active substances, such as alkaloids, saponins, flavonoids, tannins, and anthraquinones. This substance can be found in specific parts of the plants as stem, roots, and leaves. If talahib (Saccharum spontaneum L.) is found to be positive of said substances, then talahib can be a possible source of drug. The ethyl alcohol extracts of different parts of talahib were studied through the use of phytochemical analysis. The test for alkaloid was done using Mayer and Wagner reagents. Results showed that talahib extracts was positive in significant amount of precipitate. Flavonoids were determined through Bate-Smith and Metcalf test, which also gave a positive result. The test for tannin was determined through FeCh and protein binding test, which gave a negative result. Lbermann-Burchard and Froth tests were done to determine the presence of saponins, and the result was negative. The result of the study showed that talahib grass contained phytochemical constituents, such as alkaloids and flavonoids. Introduction

Talahib can be found almost everywhere. In the early days, talahib was believed to have a medicinal value. At present, it was found that the only given property of the grass is its active organism called azospirilirium, which is found in its roots. Talahib is a coarse, erect, perennial grass with stout underground rootstock growing to a height of 1 meter (m) to 3. 5 m. Leaves are harsh and linear, 0. 5 m to 1 m long, 6 millimeters (mm) to 15 mm wide. Pannicles are white and erect, measuring 15 centimeters (cm) to 30 cm long, with slender and whorled branches. Phytochemical Screening of Talahib (Saccharum spontaneum L.) ABSTRACT

The determination of the medicinal values of some plants is due to the presence of some active substances, such as alkaloids, saponins, flavonoids, tannins, and anthraquinones. This substance can be found in specific parts of the plants as stem, roots, and leaves. If talahib (Saccharum spontaneum L.) is found to be positive of said substances, then talahib can be a possible source of drug. The ethyl alcohol extracts of different parts of talahib were studied through the use of phytochemical analysis. The test for alkaloid was done using Mayer and Wagner reagents. Results showed that talahib extracts was positive in significant amount of precipitate. Flavonoids were determined through Bate-Smith and Metcalf test, which also gave a positive result. The test for tannin was determined through FeCh and protein binding test, which gave a negative result. Lbermann-Burchard and Froth tests were done to determine the presence of saponins, and the result was negative. The result of the study showed that talahib grass contained phytochemical constituents, such as alkaloids and flavonoids.

INTRODUCTION

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REVIEW OF RELATED LITERATURE

Alkaloid — a nitrogenous organic molecule that has a pharmacological effect on humans and animals. Even though alkaloids are poisonous (such as strychnine or coiine), some are used in medicine as analgesics (pain relievers) or anaesthetics, particularly morphine and codeme. with water. They have a bitter taste, and when ingested orally, are practically nonpoisonous to warm- blooded animals. When injected directly into the bloodstream. however, they are dangerous and quickly dissolve red blood cells. • Tannins — also tannic acid, common name applied to a group of vegetable products which are amorphous and crystalline, and are obtained from various plants. These are commercially important in the tanning of leather. Tannic acid is valuable as an external medicine because it is astringent and styptic.

MATERIALS

Talahib grass, amber bottles, different reagents

METHODS

A. Preparation and Extraction of Samples

About 100 grams (2) of ground dried plant material was placed in a separate Erlenmeyer flask; 80 percent ethanol was added to submerge the material. The plant material was soaked for 24 to 48 hours and filtered through Burcher funnel with gentle section. The flasks were rinsed with alcohol and the washing was combined with the filtrate. The filtrate was concentrated in a rotary evaporator. The volume of the concentrate was expressed as g/ml. Concentration of plant =

Weightof plant material

Volume of the plant

The extracts were stored in a tightly closed container and placed in a refrigerator (5 degrees Celsius to 0°C) and were subjected to phytochemical screening. B, Phytochemical Screening Method Test for Alkaloids

Preliminary test: The 2 ml plant extract was evaporated to a syrupy consistency over a steam bath to the 5 ml of 2M HCL to wash the residue and to have a volume of 5 ml filtrate. One millimeter of aliquot was taken and tested with two to three drops of Wagner reagent. Another 1 ml was tested with two to three drops of Mayer’s reagent. The result was observed and recorded as follows: + for slight turbidity

++ for definite turbidity

+++ for heavy precipitate

A (+) , (++) , or (+++) indicates the presence of primary, secondary, and tertiary alkaloids while (-) results indicate the absence of alkaloids.

Confirmatory Test

Twenty-eight percent of ammonia (NH3) was added to the remaining 3 ml aliquot. The solution was extracted three times with 10 ml chloroform (CHCL3). The CHCL3 extracts were combined and evaporated over a steam bath. The upper alkaline aqueous layer was reserved for quaternary and amine Test for Quaternary Bases and/or Amine Oxide Base

The remaining alkaline aqueous layer was made acidic with 2M HCL, which was added drop by drop. It was filtered; the filtrate was divided into two portions. Each portion was tested with Wagner reagent and Mayer’s reagent separately. A (+) or (++) result was observed in both test to indicate the presence of quaternary or amine oxide base. Test for Flavonoids

Two millimeters of the sample extract was evaporated to incipient dryness over steam bath. It was cooled to room temperature. This residue was defatted by treating with hexane until the extract is almost colorless.
The hexane extract was discarded. Ten millimeters of 80 percent ethanol was added to the residue and the mixture was filtered. The filtrate was divided and poured into three test tubes. One portion was used as control. Bate-Smith and Metcalf Test for Leucoanthocyanins.

One portion of the filtrate was treated with 0. 5 ml concentrated HCL and was observed for any change in color. It was heated for 15 minutes in a water bath. Further change in color was observed within an hour. A strong red or violet color indicates the presence of leucoanthocynins. Results were compared with the control.

Flavonoids — occur mostly in plant species and account for significant percentage of the chemical constituents ofsome dried green leaves. Flavonoids have been shown to have antibacterial, anti- inflammatory, anti-allergic, antimutagenic, antiviral, antineoplastic, antithrombotic, and vasolidatory properties. Flavonoids have an ability to modify the body’s reaction to other compounds, such as allergens, viruses, and carcinogenic properties. Also, flavonoids act as powerful anti-Oxidants. Saponins — a group of naturally occurring oily glycosides that foam freely when shaken.

The talahib plant, also known as wild sugarcane, is widespread in the tropics.

Test for Saponins

Froth test: A gugo (Entada phscoluides) extract was used as control. About 1 g of gugo was extracted with 10 ml of ethanol. A volume of alcohol extract equivalent to 2 g of plant extract was placed in two tubes; the tubes were capped tightly and shaken vigorously for 30 seconds and was allowed to stand for 30 minutes. Honeycomb froth above the surface of the liquid was observed. The results were compared to the gugo extract. Liebermann-Burchard test: The extract equivalent to 10 g plant material was dried via steam bath. It was allowed to cool at room temperature. Residue was treated

with 10 ml CHC3, and the mixture was stirred for about 5 minutes. It was allowed to stand and the CHC3 extract was filtered with 100 mg anhydrous sodium sulfate over a dry filter paper. The filtrate was divided into two portions.

One was used as control. The other portion was treated with three drops of acetic anhydride and one drop of concentrate sulfuric acid (H2SO4). Any intermediate color change was observed. The material was defatted by treating the residue with 10m1 hexane extract. The treatment was repeated until most of the coloring material was removed. A change in color was observed. Results were compared with control. Test for Tannins

An extract equivalent to 10 g plant material was taken, and it was dried over a steam bath. The residue was extracted using 20 ml hot distilled water. Five drops of 10 percent NaCl was added; the mixture was filtered. The filtrate was divided into three test tubes. One portion was used as control.

An aqueous solution of tannic acid was used as reference standard. • Ferric Chloride Test: The other portion of the filtrate was treated with three drops of ferric chloride solution. The same procedure was done to tannic acid solution. A blue-black color indicates the presence of hydrolysable tannins, while a brownish-green color indicate the presence of condensed tannins. The results were compared with the control.

RESULTS AND DISCUSSIONS

Different tests were conducted to find out the phytochemical constituents present in talahib, which usually exhibited biological activities. (The constituents were present in talahib.)

The table shows that the talahib extract was positive to alkaloid and flavonoids in four tests conducted and was negative to tannins and saponins. This means that the talahib extract contains alkaloids, which are analgesic (pain reliever) and anti-bacterial agent. It also contains flavonoids, which is known for their anti-inflammatory, anti-allergic, anticancer, and antibacterial properties. Article

Web sites

Bibliography

Contributors

kerosene, also spelled kerosine, also called paraffin, paraffin oil, or coal oil, flammable pale yellow or colourless oily liquid with a not-unpleasant characteristic odour. It is obtained from petroleum and is used for burning in lamps and domestic heaters or furnaces, as a fuel or fuel component for jet engines, and as a solvent for greases and insecticides. With a boiling point between about 150 and 300 °C (300 and 575 °F), kerosene is considered to be one of the so-called middle distillates of crude oil, along with diesel fuel. It can be produced as “ straight-run kerosene,” separated physically from the other crude oil fractions by distillation, or it can be produced as “ cracked kerosene,” by chemically decomposing, or cracking, heavier portions of the oil at elevated temperatures. Kerosene was first manufactured in the 1850s

from coal tar and shale oils, but petroleum became the major source after 1859, when E. L. Drake drilled the first oil well in Pennsylvania.

Because of its use in lamps (see kerosene lamp), kerosene was the major refinery product until the electric lamp reduced its value for lighting and the automobile made gasoline an important petroleum product. Nevertheless, in many parts of the world, kerosene is still a common heating and cooking fuel as well as a fuel for lamps. Standard commercial jet fuel is essentially a high-quality straight-run kerosene, and many military jet fuels are blends based on kerosene. Chemically, kerosene is a mixture of hydrocarbons; the chemical composition depends on its source, but it usually consists of about 10 different hydrocarbons, each containing 10 to 16 carbon atoms per molecule.

The main constituents are saturated straight-chain and branched-chain paraffins, as well as ring-shaped cycloparaffins (also known as naphthenes). Kerosene is less volatile than gasoline; its flash point (the temperature at which it will generate a flammable vapour near its surface) is 38 °C (100 °F) or higher, whereas that of gasoline is as low as −40 °C (−40 °F). This property makes kerosene a relatively safe fuel to store and handle. Kerosene is not a single compound, but rather a mixture of hydrocarbons containing between about 12 and 15 carbon atoms.

When crude oil is distilled, it is split into fractions according to boiling point. The lightest ones (up to 4 carbons) are gases. The lighter liquids (5 – 7 carbons or so) are used industrially as solvents, and the range between that

and kerosene is more or less gasoline. Above kerosene (> 15 carbons) are oils, after that the waxes, etc. etc.

Anyway, kerosene is a medium-weight mix of hydrocarbons

Kerosene contains a mixture of Hydrocarbon liquids ranging from C12H26 to C15H32. The combustion reaction of Kerosene will depend upon the components of the mixture. However, as a hydrocarbon, the reaction will produce mainly, CO2 gas and H2O vapour but, as Kerosene is a fairly oily substance, the liquid must first be atomised (formed into a fine mist) in order for it to completely vapourise and then mixed with sufficient air to give complete combustion, otherwise some Carbon (as soot) and some Carbon Monoxide (CO) will also form. kerosene is a mixture of hydrocarbons of 12 to 15 or more carbons. You can’t write a chemical equation for the combustion of a mixture.

Assume kerosene is all C15H32

C15H32 + 23O2 –> 15CO2 + 16H2