

A Review on Extraction Methods and Identification of Chemical Constituents of Different Medicinal used Plants

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Abstract: *Plants are recognized for good and good purposes such as food, fiber, medicine etc. But the connection of plants with modern day such as poison (suicide, accident, murder) serves as a clue and important evidence in criminal cases and civil cases. As there are different types of active compounds present in plant extracts such as Alkaloids, Anthocyanins, Cardiac glycosides, flavonoids, phenols, phytochemicals etc. All of these categories can be found in the plant's leaves, seeds, bark, flowers, roots, and pulps that are used as springs. To identify the plant, numerous extraction and measuring methods are performed. Medicinal plants are used to treat a wide range of diseases, including colds, flu, and other medical conditions. There are therefore various extraction processes that play a role in the extraction results and the tests performed. As different medicinal plants have different extracts. The marijuana industry known for its production has over a thousand chemicals to be identified. But other publications did not do so. The medicinal plant Mentha piperita, which belongs to the Lamiaceae family, also contains compounds from other living plants. As a result, gas chromatography-Mass spectrometry can be used to detect and separate its source material. As the antioxidant properties contained in various plants have a way of seeing a beneficial effect. As a result, the antioxidant activity and phenolic content of albizia procera leaves should be reduced. Bioactive chemicals found in the fruit can help fight a variety of degenerative disorders. They demonstrate health benefits as well as illness prevention techniques. The phytochemicals included in it were extracted using a variety of extraction methods. Its seeds can be used to cure a variety of ailments. As a result, multiple extraction methods will be utilised to extract phytochemicals from jamun seeds, both in terms of quality and quantity.*

Keywords: Alkaloids, medicinal plants, gas chromatography, mass spectrometry, phytochemicals

1. Introduction

Principle

Phytochemicals from plant sources, such as phenolic and flavonoids, are found in many therapeutic plants and have a good impact on health. (1) This high phenolic and flavonoid content has been linked to antioxidant activity in the prevention of certain illnesses. We do research on medicinal plants using the premature extraction and extraction processes, both of which are critical in the processing of bioactive components from plants. Modern extraction methods, microwave assistance, ultrasound-assisted extraction, and other advancements in medicinal plant processing have all been made.

Broussonetia Luzonica

Because they contain the same active ingredients, plants of the same genus have similar biological activity. Broussonetia luzonica, which is utilised in a variety of edible and vegetable applications, has a variety of extracts and chemicals that may be identified using gas chromatography-mass spectrometry. (3)

Cannabis

Cannabis ruderalis is becoming known for its restricted ability to produce active chemicals, similar to how cannabis sativa and cannabis indica are known for their toxicity. As the cannabis industry grows in popularity, both on the black market and in the legal market, extraction is becoming a major focus for everyone. (4) Cannabis contains thousands of chemicals or components that require drying and extraction methods. Extraction methods include traditional methods,

contemporary approaches, solvent less procedures, and hydrocarbon extraction methods. (5,6,7)

Mentha piperita L

In traditional medicine, Mentha piperita L is also recognised as a medicinal plant. (8) This leafy plant has bioactive components that are useful to the body, but it also includes poisonous penny-royal compounds that are harmful to the liver. (9) Contains substances such as methanol, menthone, and menthyl acetate, flavonoids, polymerized polyphenols, saponins, and choline, among others, in high quantities of essential oils ranging from 1.2 percent to 1.5 percent. (10,11,12,13) This oil can help with mental weariness and depression, as well as providing fresh air, stimulating the mind, and concentrating the mind. It also works in some countries for toothpaste, chewing gum, toothpaste, sweets, soap, lotions, and cough treatments, among other things. (14,17,18) There are no activities that can be done to get rid of this type of plant. We can use gas chromatography and mass spectrometry to extract compounds from the leaves of this plant (GC-MS).

Albizia Procera

Free radicals can cause oxidative damage to a variety of substances, including lipids, proteins, and nucleic acids, which are all implicated in different stages of disease. Many chronic diseases, such as atherosclerosis, heart disease, ageing, ischemias, and cancer, are caused by it. (19) Antioxidants aid in the prevention of degenerative illnesses. by the distribution of the oxidising chain reaction at low concentrations relative to the delay of the oxidisable substrate (21) Other antioxidants found in nature include

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ascorbic acid, carotenoids, and phenolic substances. (22) This substance has antioxidant effects. (23) Antioxidant properties of plants defend against oxidative stress. (24) We look into Albizia procera extracts, which are claimed to kill insects. They can be utilised as a source of medication, such as bark for fish poisoning, as well as during pregnancy and stomach therapy. ntegrase activity ntegrase activity ntegrase activity (27) It has also demonstrated that DPPH possesses detoxifying properties. It has also shown the detoxifying activity of DPPH. (28) To produce free radicals during the biochemical process, some plants have antioxidant properties and release oxygen as metabolic reactions. (29)

Jamun Seeds

Because phytochemicals are beneficial to the environment, they are found in many groups, such as in juniper plants. solid phase, helped micro-extraction, micro-extraction, micro-extraction, micro-extraction, micro The tropical evergreen tree *Syzygium cumini* belongs to the Myrtaceae family. It is India's largest producer, followed by numerous other Indian states. Jambosine, gallic acid, corilagin, ellagic acid, diphenoylglucose, quercetin, and other compounds can be found in its seeds. (29)

2. Discussion

The types of solvents used in processes have a significant impact on all processes that utilise them. However, as a comparison, the data are confined to phenolic testing, flavonoid concentration, and overall yield. Solvents have a significant impact on all procedures that involve solvents in their processes (maceration, MAE, UAE, and ASE). In comparison to MAE and the UAE, where the "green approach" is practised, chemical waste is a big issue in the maceration system (30). Despite the fact that all of these extraction procedures produced crude extracts with a combination of metabolites, the efficiency of extruded extracts employing nano-encapsulated processing in *Centella asiatica* was comparable to that of purified extracts (31). This fact implies that if revisions and extensions are to be made, constant separation and refinement of quotes, which is hard and time-consuming, is not required.

It's also crucial to use the right conditions for each extraction procedure. To extract thermo-labile chemicals, some factors such as temperature and light must be examined. Anthocyanin was extracted from red and blue flowers using a slightly acidic solvent (0.1 percent HCl methanol v/v), demonstrating that extraction processes are affected by pH. (32). In the ethanol system, hydrochloride acid has been found to be more effective than acetic acid in releasing anthocyanin (33). Plants are not the same as well-designed methods. Although all significant elements (temperature, solvents, agitation speed, and so on) have the potential to boost output, improper judgement can result in compound degradation. one. Advanced suction technology, such as ASE, should be examined in the case of health issues.

A series of extracts including soluble polarity solvents, such as n-hexane, ethyl acetate, and methanol, will be provided from B leaves. The existence of several bioactive chemicals was discovered using GC-MS analysis of n-hexane, ethyl acetate, and methanol extracts. The largest common

combination among the three green quotations was not found. According to the research, biological substances are among the properties recognised by GC-MS. Some plants have been found to contain propanetriol mono acetate, which has antibacterial, anti-inflammatory, diuretic, and anticancer properties (34). Propanetriol mono acetate has been shown to be a precursor to tricetin (an antifungal), but it can also be used as an active medication and delivery vehicle for anti-cancer drugs. (35)

Lupeol has strong anti-mutagenic effects in both in vivo and in vitro testing. (35,36,37) Antioxidant, chemopreventive, anticancer, and hypocholesterolemic properties of squalene (37,38). AGS, MDA-MB-231, HT29, and NIH 3T3 cells have all been demonstrated to be cytotoxic by tetracosane (39). Antibacterial, anti-diabetic, and anti-tumor properties are all found in triacontane (40,41). The presence of these composite biological capabilities in *B. luzonica* leaf extract supports the plant's therapeutic application. The key bioactive chemicals included in all quotes have been discovered by research. The discovery of these substances in the plant is used to determine the plant's potential health advantages, which leads to the advancement of biologic and pharmacologic research.

Traditionally, dried marijuana flowers were the preferred product; but, as the market expands, so does the demand for a variety of products with various qualities. As a result, there are numerous considerations to consider when selecting a drying technique or extraction method for a certain product. Ice drying is deemed appropriate among the numerous methods of post-harvest drying when compared to other methods; however, there is currently no academic research or evidence to support this. Drying is still the most effective strategy to prevent mould and bacteria from spreading during storage before extraction. Because of their high production, simple method, and speed, solventless extraction and hydrodynamic extraction are attractive, but there are no scientific publications to encourage their use in a large product. Slightly polar solvents are preferred for extraction due to the lipophilic or hydrophobic characteristics of cannabis. Non-polar solvents are abundant in terpenes with more than 15 carbons. Traditional procedures like as soxhlet and dynamic maceration are utilised, which are time-consuming and soluble but precise enough to compare with current technologies. SFE, MAE, and UAE are known as possible and simple techniques among modern ways.

The antioxidant activity of methanol and its derivatives were investigated in this work using the DPPH radical scavenging assay, as well as its ability to reduce energy consumption. Other investigations are carried out, such as phytochemical experiments and phenolic content. The most extensively utilised approach for assessing the influence of free radical emissions from industrial plants is DPPH testing. This approach relies on the reduction of a methanolic DPPH solution in the presence of an antioxidant, which results in the creation of DPPH-H, which has a low response. Depending on the amount of antioxidant chemicals, it turns yellow to varied degrees. The intensity of the output is determined by the degree of colour variation. The maximum dose reduction of DPPH radicals was obtained from APE in

this investigation, while intermediate function was acquired from other quotations.

Yutana et al. (42) extract the bark of the *Albizia procera* stem with ethanol. They didn't separate the ethanol extracted with different polarity solvents. Instead of ethanol, we used methanol to remove the leaves. Methanol is well-known for its ability to dissolve active substances in cells. As a result, extracting intracellular chemicals from plant material was simple due to the ease with which the cell membrane could be penetrated. When methanol is utilised as a solvent in the extraction process, many active chemicals such as anthocyanins, saponins, tannins, flavones, and polyphenols are produced, according to Tiwari et al. (43) The antioxidant activity of extracts has also been observed to be strongly reliant on the type of solvent utilised due to components having variable polarity displaying various amounts of a powerful antioxidant (44) Aside from its powerful deforestation activity, Leaves. *Procera* may be a potential antioxidant that can protect against a variety of diseases caused by free radicals.

The presence of antioxidants in APM and other components of *A. procera* leaves has led their complex $Fe^{3+} - ferricyanide$ to be converted to iron, resulting in a reduction in energy. The presence of polyphenols appears to be responsible for APM and other components' iron-reducing action. The ability of a plant to reduce excretion may be a key measure of its antioxidant activity.

Because their hydroxyl groups give a disposal volume, phenolic chemicals are one of the most important plants (45). Because of their possible antioxidant properties, the phenols found in the leaves have gotten a lot of attention (46). Plant products high in phenolics are frequently employed in the food business because they reduce lipid oxidation and improve the quality and amount of nutrients (47). Because of the varying antioxidant potency of extracts, their antioxidant activity is strongly dependent on the solvent. a polarity-differentiated compound (48). As a result, existing phenolic chemicals can be used to specify the medicinal properties of *A. procera* leaves. Saponins, tannins, glycosides, and flavonoids were discovered in phytochemical investigations. Antioxidant capabilities are known to exist in such ingredients (49). The chemical constituents found in the extraction, however, that are responsible for this activity have yet to be identified and need to be explored.

Three different extraction methods, such as Soxhlet extraction, microwave-assisted extraction, and ultrasonication-assisted extraction, were used to extract bioactive compounds from jamun seeds using ethanol as a solvent, resulting in three focused extracts that were included in the quality analysis analysis. It contains bioactive and bioactive chemicals. The three extracts were separated phytochemically in terms of quantity and volume to generate a variety of bioactive chemicals. For testing the antioxidant qualities of quotations, phenols and flavonoids are mostly used to classify grains.

Three estimates of several criteria were compared, including antioxidant activity, total phenol content, phytochemical

quality profile, and percent yield. To obtain biological combinations at higher altitudes, all quotations from young plants were acquired. The leaves of *M. piperita* contain a well-refined extract of bioactive chemical components, which may be identified using the GC-MS technique discussed before. Biologically active chemicals are present in high amounts in all plant extracts.

Plant protection methods can take advantage of high concentrations of big molecules. They're part of a vast set of plant-derived defensive compounds known as phytoanticipins or phytoprotectants (50, 51). It was necessary to use a *piperita* with GC-MS. Chemical compounds that have been identified may have environmental implications. The majority of the compounds derived from *M. green piperita* in Omani have not been published.

3. Conclusion

The efficiency and phytochemical characteristics of the final extraction were altered by sample processing such as milling and drying, which ultimately contributed to the final release. To summarise, there are no universally effective extraction methods for plants, and each extraction procedure is unique. Methods that have already been established can be utilised to help guide the selection of relevant methods. However, earlier extraction methods and extraction methods must be tested and selected based on the research objectives, samples, and targeted combinations.

Large bioactive chemicals have been found and detected spectroscopically in these three quotes. As a result, identifying the many physiologically active chemicals emitted by *B. luzonica* invalidates biological and pharmacological research.

Organic solvents, according to current knowledge, are a simple technique to eradicate marijuana treatment. However, more investigation into some of the drying and extraction processes is required. Future research should also investigate how to improve raw and sustainable marijuana production. *Procera* is a potent natural antioxidant that can help prevent diseases caused by free radicals. Different phytochemicals are being compared in current study. It also identifies the bioactive medicinal chemicals found in jamun seeds, allowing them to be used as a general cure for a variety of diseases. Future research may focus on further refining, identifying, and separating bioactive chemical components. Due to the existence of a specific phyto component for full usage, efforts should be focused to the medical application of these studied fruit extracts. Raw herbal extracts can be employed as medicinal properties, according to current study. Treatment for a variety of disorders The first study of this kind used GC-MS to analyse and identify chemical components in immature plant products.

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