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Medicinal significance of *Datura stramonium*, *Musa paradisiaca* and antifertility activity

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Abstract
The Indian Himalayan Region (IHR) is home to some 1,748 different plant species, many of which are beneficial and have made their way into contemporary medicine (Siwach *et al*., 2013). In IHR, medicinal plants contain over 12,000 chemical components. Many plants are included in it, some of which are believed to have medicinal properties. A variety of diseases may be alleviated by using various plant components (Samant *et al*., 2007). The medicinal plants of the Himalayas play an important role in local life and commerce. Roughly 3,500 different species of plants call Himachal Pradesh home. The medicinal importance of 500 of these species has been well recognised (Chauhan, 2003). Since medicinal plants are central to traditional medicine, there is a high demand for them. A staggering 90% of medicinal plants are collected from their natural habitats, with an additional 69% being harvested by methods that cause harm to the plants. Dhar *et al*. (2000) found that this poses a clear threat to medicinal plants. The therapeutic effects of plants are derived from their secondary components. Among their various biological functions and defence mechanisms, plants rely on chemical compounds known as secondary metabolites. Plants are able to adapt and defend themselves by connecting with their environment via the use of second-hand chemicals.

Keywords: Herbalism, medicinal plants, antifertility activity, antiepileptic effects

Introduction
Medicinal plants are used as raw materials in herbalism, contemporary medication production, and other medical commodities. The Indian Himalayan Region (IHR) is home to some 1,748 different plant species, many of which are beneficial and have made their way into contemporary medicine. In IHR, medicinal plants contain over 12,000 chemical components. One of the several ecological roles of these compounds is to shield plants from predators like insects and animals. The hilly northwest Himalayan state of Himachal Pradesh is home to a diverse array of wildlife and fauna that are significant to society and the economy. Longitudes extend from 75°45′55″ to 79°04′20″ E, while latitudes from 30°22′40″ to 33°12′40″ N make up the range.

Extreme heat stresses plants because it produces and accumulates reactive oxygen species (ROS). The biological activities of cells and the substances used by plants in their cells are negatively impacted by these ROS. A plant's response to environmental changes might manifest in altered physiology, health, or phenology. Cold temperatures stress secondary metabolites in any plant, however research on this topic has shown conflicting findings. Secondary molecules are said to have both beneficial and bad effects, depending on the circumstance. Due to a lack of data, scientists are unable to draw firm conclusions on the effects of external stress on secondary molecules. More research on the effects of abiotic stress on Himalayan medicinal plants is necessary because of their economic importance. The temperature-reactivity of the secondary metabolites in *D. stramonium* has not been investigated.

It is believed that bananas (*Musa paradisiaca* spp.) were among the first foods consumed by humans. For centuries, they have been an integral element of several nations' civilizations. Bananas originated in Southeast Asia. They were originally cultivated in northern India, the Philippines, Sumatra, Java, and Cambodia. It was in the 1600s that this kind of banana was introduced to Cuba and Santo Domingo. In the late 19th and early 20th centuries, Jamaica saw the establishment of its first commercial farms. Additional ones sprang up in a plethora of Mexican and Central American nations later on.

In 1996, α-amylase was produced by Bacillus subtilis using the banana fruit's tip as a medium, according to Krishna and Chandrasekaran. By using enzymes, Oberoi *et al*. (2011) were able to degrade 28.2 grammes of banana peel into 1 litre of ethanol.

Industrial cellulase, β-glucosidase, and pectinase were shown to be able to degrade 8 FPU g^{-1} cellulose, 15 IU g^{-1} cellulose, and 66 IU g^{-1} pectin, respectively, producing 28.2 g L^{-1} of glucose and 48 g L^{-1} of reducing sugars (Oberoi *et al*., 2012). In 2012, the SSF approach of producing α-amylase used banana peels to get B. subtilis. Over the course of 24 hours, the enzyme maintained its peak activity at 7.26 IU mL^{-1} per minute. The white-rot fungus *Trametes Pubescens* has long been known to produce extracellular laccase with the aid of banana peel. The production of enzymes that break down cellulosic and lignin from banana byproducts has been investigated in SSF. They discovered that there were more enzymes that broke down lignin than cellulosic materials in the banana peels. The study's results demonstrated that SSF may be used to produce ligninolytic enzymes from banana trash.

Literature review

Mekonen, Girmay &Egigu, Meseret & Muthuswamy, Manikandan. (2021) [2]

In Ethiopia, people really want bananas as a food, but they can't grow them because they can't discover plant material that is free of illness by using traditional cultivation methods. A variety of plant components were cultured in MS medium with varying concentrations of BAP (0.5, 1.0, 1.5, and 2.0 mg/L) in order to initiate new shoots. A mixture of 1.0, 1.5, or 2.0 mg/L of BAP and 0.25 to 0.50 mg/L of IBA was added to MS medium in order to accelerate shoot growth. We added 1.0, 2.0, 3.0, and 4.0 mg/l IBA to half-strength MS medium to promote root growth. We employed MS medium devoid of PGRs as a control. Roots on half-strength MS medium with 2.0 mg/L IBA grew at 93.4% speed, had 7.67 roots per shoot, and were 11 cm long. As a first step in their adaption process, plantlets spent 96.00% of their time on a coco peat substrate and 97.92% on a mixture of forest soil, sand, and dung. All things considered, the experiment proved that the tested PGR kinds, dosages, and combinations are effective for dispersing a lot of bananas.

Olawale Arogundade, Joshua Matthew, and Solemi Akinyemi (2020). The experiment set out to determine the effect of bit size and growing media on plantain stem development. The three bit sizes employed in this investigation were A (0–40 g), B (41-80 g), and C (81-120 g). Topsoil alone, sawdust alone, and a combination of the two were used for the growing process. In order to implement the sawdust treatment, the beds were excavated and then covered with sawdust. The topsoil + sawdust treatment included an equal mixture of the two materials. After separating the sword suckers into their respective groups, they were weighed using a sensitive scale. We soaked the parts for three minutes in a pesticide solution. After that, they were placed in a shaded area to dry. Three times each treatment was used in the experiment, which was set up in a complete block randomization technique. In contrast, soil contained 1.34 average suckers per bit more than any other material. For optimal succker quality, it is recommended to use bit size C (81-120 g) on dirt.

Research by Lavudi *et al*. (2022) [4]. A number of studies have shown the healing properties of *Musa paradisiaca* and its potential to cure a variety of medical issues. Our previous *in vitro* studies shown that Musa flower extracts have the potential to aid in the battle against cancer. The current research, which investigates the anticancer potential in living things, is a direct result of this thread. The effectiveness of banana blossoms as a breast cancer treatment in female Wistar rats administered DMBA was the primary subject of this investigation. We tested the hypothesis that alterations in hormone levels would disrupt the estrous cycle in mice by inducing tumours. Treatment with musa flowers has also been shown to improve the form of the treated groups, which exhibited higher tissue damage compared to the water-treated groups. The administration of tumours to mice has been shown to disrupt their menstrual cycles. Musa flower extracts shown potent anti-cancer activity in experiments using the MCF-7 and MDA-MB-231 breast cancer cell lines. Ultimately, our results demonstrated that banana flower compounds have the potential to combat breast cancer in both laboratory and human studies.

Ramu, Ramith &Shirahatti, Prithvi & H, Deepika & Naik, Shrisha & Sreepathi, Navya & Patil, Shashank & Prasad M N, Nagendra. (2022) [5]

According to Indian traditional medicine, the banana pseudostem is not only a nutritious food source but also a medicinal and ethnopharmacological remedy. Determining the efficacy of C1-Sigmasterol, C2-Sitosterol, and EE derived from banana pseudostems in combating diabetes was the primary goal of the research. C1 and C2 were subjected to tests in a controlled laboratory environment against the α-glucosidase enzyme, with IC 50 values of 7.31 ± 0.12 and 7.80 ± 0.93 µg/ml, on the other hand. There were two distinct forms of inhibition seen in these, denoted as K1 and K2. *In vitro* glycation studies demonstrated that EE and its components halted the formation of intermediate molecules and halted protein glycation at every level. C1, EE, and C2 were the most potent inhibitors of aldose reductase, with concentrations of 2.67 ± 0.27 g/ml, 1.80 ± 0.36 g/ml, and 1.93 ± 0.37 g/ml, respectively. Symptoms of diabetes may manifest in living organisms as hypercholesterolemia and hypertriacylglycerolemia. Research on diabetic rats revealed significant improvements in blood and liver levels, as well as increases in enzymatic and non-enzymatic antioxidants. When it comes to managing diabetes and its complications, EE may also play a significant role.

Medicinal significance of *Datura stramonium*

A member of the Solanaceae family, *Datura stramonium* (DS) only blooms once a year. Originating in the Americas, it is now found all across the globe, particularly in Europe, Africa, and Asia [1]. It develops into a bush that is 2–5 feet tall and has a terrible odour. There is no restriction on the growth or uprightness of the stems. It has a long, thick, and strong white root. A simple or bifurcated base, it is spherical, straight, and hairless. The leaves are soft, serrated, and undulating in an irregular fashion; they are also smooth. These are 8 to 20 centimetres in length. The leaves retain their bitter, nauseating flavour even after drying, which is imparted by the herbs. Big, white, and terminal, the blossoms are a sight to see. The walnut-sized fruit is 5 centimetres in length and contains four valve capsules. After it matures, it splits into four halves, and the seeds within each section are plentiful. Long and flat, the seeds resemble diamonds in form and are black in colour. Members of the genus *Datura* include several common garden plants, including potato, *S. tuberosum*, Lycopersicon, *Coffea arabica*, and pepper. Species of the *Datura* genus may be more precisely identified with the use of genetic markers. These indicators indicate that mutations have resulted in a great deal of variety within this species.

It is believed that *Datura stramonium* provides hallucinogenic and intoxicating effects. It was dried and burnt so that one

may experience hallucinations and total relaxation. When consumed improperly, it might cause poisoning. Some have claimed that eating food with *D. stramonium* on it may cause poisoning in both humans and animals. When the seasons are right for planting millet, wheat, rye, maize and bean seeds, it thrives prolifically in such areas. On rare occasions, the grain has been discovered to contain *Datura* seeds.

Brain effects from high doses of *Datura* include disorientation, abnormal behaviour, nightmares, and eventually forgetting. Thus, much information on the potential benefits and risks of *D. stramonium* is required. The article primarily focuses on the medicinal uses of *Datura stramonium*. That have been discovered after extensive testing on humans, animals, and other test subjects.

- **Organophosphate Poisoning (OP)**

DS has atropine and other drugs that block cholinergic signals. It works very well to treat the key signs of OP that involve cholinergic systems. When Bania *et al*. looked into a major OP, they found that DS seed products helped. To make a 2 mg/ml atropine mix for their test, they cooked DS seeds in water. Fifth, a single amount of this fluid was given intraperitoneally to the male rats before they were given a 25 mg/kg dichlorvos shot under the skin. A rat model of serious OP had a lot more rats that lived after being treated with *Datura* seed extract.

- **Antiepileptic Effects**

Rats were administered one of three plant treatments - S. lateriflora, G. sempervirens, or *D. stramonium* - through their water for 30 days, according to Peredery and Persinger [28]. The subjects were administered a combination of pilocarpine (30 g/kg) and lithium (3 mEq/kg) by injection simultaneously one week before the experiment to induce a seizure. For an additional 30 days when the rats were simply fed tap water, we recorded the number of unannounced seizures that occurred daily throughout a 15-minute observation period for each rat. Seizures were non-existent in rats administered with a mild mixture of the three plant fluid extracts. Removing this medication caused the rats to have almost the same number of random seizures as having control.

- **Antimicrobial Activity**

Some methanol is taken from the top of DS were able to kill gram-positive bacteria, but the effect was dose-dependent [29]. According to Sharma *et al*. [30], DS was very good at killing different types Vibreo cholera and Vibreo parahaemolyticus. The lowest amount of DS extracts that could be mixed with acetone was between 2.5 and 15 mg/ml., which made them effective against a wide range of vibrios.

- **Anti-Asthmatic Activity**

Stramonium has many alkaloids in it, such as atropine and scopolamine, which work against cholinergic substances and open up airways. They work on muscarinic receptors in the lungs by blocking them, mostly the M2 receptors, in cells of the smooth muscle and submucosal glands. In turn, this makes the airways smooth muscle bigger, which helps asthma attacks happen more often. Charpin *et al*. said that smoking cigarettes with *D. stramonium* in them is a good way for asthmatics whose lungs are slightly blocked to clear them up. Women who take *D. stramonium* for asthma, on the other hand, subject their babies to it and makes acetylcholine keep being released. This makes nicotinic receptors less sensitive, which could damage the baby permanently.

- **Analgesic Activity**

We tested how well drunk *Datura* seed relieved pain in people with both short-term and long-term Using a hot plate and formalin studies to find pain. The extracts helped animals with pain in different ways depending on how much they were given. The ED50 for hot plate tests was 25 mg/kg and for formalin tests it was 50 mg/kg.

- **Antifungal Activity**

Mdee *et al*. say that the fungicidal properties of the acetone extracts show that DS seeds could be used antibacterial drugs that come from plants. Between 1.25 mg/ml and 2.50 mg/ml is the MIC for DS medicines.

- **Anticancer Activity**

At a reasonable amount stramonium at a dose of 0.05 to 0.1g was shown to be helpful against human skin cancer of the nose and throat. But care should be taken when using *Datura* as a chemo drug because it may have bad anticholinergic effects [35].

Infertility in Women

Datura flowers can help women who are having trouble getting pregnant. Dried flower powder (120 mg) mixed with honey is given 10 days after a woman first gets her period. It's taken for five to seven days. This cure works for people who can't have children for unknown reasons.

- **Insecticidal Activity**

The *Datura* plant has a pungent aroma that deters a variety of pests and insects. Research conducted by Kurnal *et al*. shown that ethanol extracts of *D. stramonium* seed and leaves effectively eliminated acari, adult two-spotted spider mites (Tetranychusurticae), and their eggs in a controlled laboratory setting. For this experiment, we determined the optimal concentration of leaf and seed extract using a Petri dish disc-spray tower. At 48 hours, 98% of the adult spider mites were destroyed by the leaf extract, whereas 25% were killed by the seed extract. According to these findings, *D. stramonium* may be useful in eliminating the two-spotted spider mite as well.

Medicinal significance of *Musa paradisiaca*

Musa paradisiaca Linn. is the name of this single-flowering plant. Commonly known as plantain, it belongs to the Musaceae family. Indians call a rough banana a "plantain." Medicinal properties of some musa species include protection against ulcers, bactericidal action, accelerated wound healing, antioxidant defence, and mutation inducing. 1. Banana fruits, stem juice, and flowers were subjected to chemical testing to determine their potential to inhibit the growth of microorganisms and speed the healing of wounds. 8. Without causing cancer or mutations, the plantain banana, scientifically known as *Musa paradisiaca*, may aid in the healing of ulcers by increasing mucosal defence factors, which in turn increases the number of mucosal cells and improves DNA synthesis. 9 In light of these considerations, the primary goal of this research was to determine the phytochemical composition, antibacterial activity, and capacity to repair burn wounds of a methanolic extract of the stems of *Musa paradisiaca*.

- **Antibacterial activity**

The King Institute of Preventive Medicine in Guindy, Chennai, gave us test bacterial samples. They are called Staphylococcus aureus and Pseudomonas aeruginosa. The

organisms were kept alive in nutrient agar on its side at 4°C and subcultured every so often. To test how well the extracts killed bacteria, this experiment used the disc diffusion method 11. DMSO was used as the negative control, and twenty drugs were used as the positive controls. An mm scale was used to measure the blocking zones in millimeters. Twenty different kinds of antibiotics were used to see how well the *Musa paradisiaca* stem extract in methanol Linn fought them.

- **Minimum inhibitory concentration**

The broth dilution method 12 was used with different amounts of liquid nutrition media and test materials to find the minimum inhibitory concentration (MIC). A test tube that had been cleaned was filled with Clean 10 ml of feed material that is twice as strong. As a stock solution, 100 µg/ml of *Musa paradisiaca* Linn. Stem extract was used was mixed with double-strength nutrient media in each tube in different amounts. After adding 0.1 ml of bacterium suspension, the tube was left to grow. DMSO was used to dissolve the methanolic residue. The organic liquid DMSO is very neutral and mixes easily with water. The growth was checked for sediment, and suppression was found by seeing that there was no growth. To find the MIC, the smallest amount of material that stops smoke from building was used.

- **Wound healing activity**

(a) Experimental animals

Adult who is healthy the animal house at Vels University sold Wistar white rats that were bought. During the whole trial, they were given food and water whenever they wanted. Following the OECD rules 423 for an acute poisoning study, it was done on Wistar white rats. The study was done after getting permission from the school ethical committee (registration number: 290/CPCSEA/12.12.2000). Rats called Wistar albino, which weigh between 120 and 150 grams, were used as burn wound models. The rats were busy and ate and drank normally.

(b) Burn wound model

There were two groups of white Wistar rats. A red-hot steel stick was used to make a small 8-mm burn on the rat's back leg while the animal was asleep on ether. The animal's wound was left open to the air, and each animal was kept in its own isolated box.

(c) Histopathological examination

After 15 days, the experiment was over, and the animals that were still alive had their wounds taken off so that a histology study could be done. The area that was asked for was randomly chosen just below the epidermis and in each skin part. Histopathological tests were carried out and looked at according to what Sourav Banerjee said.

Screening the Compounds for Antifertility Activity

a. Pharmacological activity of compound Mp-B Efficacy of fraction on the estrous cycle of rats

In table 1, you can see how the most active chemical in the stem of M. paradisiaca, Mp-B, affects the length of the estrous cycle. Part Mp8 of the M. paradisiaca stem was looked at in this study of 100 mg/kg and 200 mg/kg body weight, respectively. You could figure out the four stages of the estrous cycle by looking at which cell types are present and absent and how many of each type there are. The fraction Mp-B showed strong (p<0.001) antiovulatory effects.

It was found that both amounts of fraction Mp-B made the estrous cycle last longer, but the 200 mg/kg dose was a dose of 100 mg/kg was much less effective (p<0.001) than this one. The anti-ovulatory effect of Mp-B was proven because it lengthened the diestrous phase, which made it less likely for the rats to get pregnant. As a result, the amount caused ovulation to be slowed down, which decreased the cyclicity.

Table 1: Effect of treatment of compound Mp-B on estrous cycle in rats

			Duration of different phases of estrous cycle (days)			
Treatment	**Dose mg/k g**	**Duration of cycle (Days)**	**Proestrous**	**Estrous**	**Metestrous**	**Diestrous**
Control	---	4.21 ± 0.12	0.74 ± 0.37	0.73 ± 0.27	0.83 ± 0.31	2.43 ± 0.50
Mp-B	100	5.77 ± 0.55**	0.35± 0.11*	0.92 ± 0.30	0.67 ± 0.57	5.43 ± 0.54**
	200	6.87 ± 0.72***	0.48 ± 0.38*	0.71 ± 0.12	0..85 ± 0.65	5.79 ± 0.75***

Mp-B-Fraction 8 of ethanol extracts of M. paradisiacastem

Each value is the mean ± SEM for a group of six people; **p< 0.01, ***p< 0.001 means that there is a big difference between this group and the control group.

Table 2: Effect of post-treatment of compound Mp-B on estrous cycle for 15 days in rat

Treatment	**Dose mg/kg**	**Duration of cycle (Days)**	Duration of different phases of estrous cycle (days)			
			Proestrous	**Estrous**	**Metestrous**	**Diestrous**
Control	---	4.21 ± 0.12	0.74 ± 0.37	0.73 ± 0.27	0.83 ± 0.31	2.43 ± 0.50
Mp-B	100	5.36± 0.66	0.76 ± 0.45	0.83 ± 0.30	1.13 ± 0.36	2.53 ± 0.55
	200	5.62 ± 0.31	0.76 ± 0.47	0.91 ± 0.63	1.34 ± 0.62	2.34 ± 0.45

Estrogenic & antiestrogenic activity of compound Mp-B

Compound Mp-B from M. paradisiaca had an estrogenic effect, which was shown in Table 2. When Mp-B was given to rats at amounts of 100 and 200 mg/kg body weight, it had the most significant (p<0.001) estrogenic action. It was also discovered that the treated rats' endometrium was thicker than that of the normal rats. The results showed that giving compound Mp-B to animals made their uteruses much heavier, which suggests that compound Mp-B has estrogenic properties. But when fraction was given with ethinyl estradiol, it made the estrogenic effect weaker. Based on the results, it was found that substance Mp-B (100 mg/kg) and ethinyl estradiol worked best together when compared to an amount of 200 mg/kg (table 2). The administration of Compound Mp-B caused a large rise in uterine weight due to having estrogenic effects. But when it was given with ethinyl estradiol, it greatly lowered the estrogenic effects of ethinyl estradiol by itself.

Table 3: Estrogenic & antiestrogenic activity of compound Mp-B

Treated groups	Dose (mg/kg)	Uterine weight (mg/100g body weight)
Control	(Tween-80, 1%)	50.78 ± 1.32
Ethinylestradiol	0.02	158 ± 2.78***
Mp-B	100	76. 24 ± 1.34***
	200	96.45 ± 2.52***
Ethinylestradiol + Mp-B	0.02+100	165.31 ± 0.34***†
Ethinylestradiol + Mp-B	0.02+200	142.22 ±3.65***††

*p< 0.05, **p< 0.01, and ***p< 0.001 mean that there was a significant difference from the Control group. *p< 0.05, *p< 0.01 means there is a significant difference from Ethinyl estradiol.

Pharmacological Activity of Compound Ds-A

Antifertility Activity

Antiovulatory Activity: The action of compound Ds-A depends on the dose. A dose of 100 mg/kg wasn't strong enough, but a dose of 200 mg/kg dropped both the proestrus and estrous stages and increased the diestrus phase.

Table 4: Effect of treatment of various compound Ds-A, on estrous cycle for 5 days in rats

Treatment	Dose mg/kg	Duration of cycle (Days)	Duration of different phases of estrous cycle (days)			
			Proestrous	Estrous	Metestrous	Diestrous
Control	---	4.64 ± 0.31	0.74 ± 0.37	0.83 ± 0.17	0.93 ± 0.21	2.14 ± 0.12
Ds-A	100	4.78 ± 0.52*	0.67 ± 0.33	0.66 ± 0.66	0.91 ± 0.27	2.65 ± 0.64*
	200	5.75 ±0.49**	0.26 ±0.21*	0.83 ± 0.65	0.66 ± 0.33	4.00 ± 0.51**

Ds-A - Fraction 5 of *D. stramonium* (Linn.), Value represents the mean ± S.E.M. (n=6);** p< 0.01 significant difference from control

Table 5: Effect of post-treatment of compound Ds-A, on estrous cycle for 15 days in rat

Treatment	Dose mg/kg	Duration of cycle (Days)	Duration of different phases of estrous cycle (days)			
			Proestrous	Estrous	Metestrous	Diestrous
Control	---	4.64 ± 0.31	0.74 ± 0.37	0.83 ± 0.17	0.93 ± 0.21	2.14 ± 0.12
Ds-A	100	5.14 ± 0.46	0.66 ± 0.65	0.83 ± 0.30	1.00 ± 0.36	2.65 ± 0.55
	200	5.15 ± 0.58	0.83 ± 0.47	0.91 ± 0.63	1.25 ± 0.62	2.16 ± 0.59

Ds-A- Fraction 5 of *D. stramonium* (Linn.)

Table 6: Estrogenic & antiestrogenic activity of compound Ds-A, on estrous cycle for 5 days in rats

Treated groups	Dose (mg/kg)	Uterine weight (mg/100g body weight)
Control	(Tween-80, 1%)	47.50 ± 1.25
Ethinylestradiol	0.02	145 ± 3.787***
Ds-A	100	68. 43 ± 1.24***
	200	83.22 ± 2.02***
Ethinylestradiol+ Ds-A	0.02+100	165.31 ± 0.34***†
Ethinylestradiol+ Ds-A	0.02+ 200	142.22 ±3.65***†

Ds-A - Fraction 5 of *D. stramonium* (Linn.)

The numbers show the mean (± S.E.M.) of six people in a group; *p< 0.05, **p< 0.01, ***p< 0.001 means there was a significant difference from the control group. It is not the same as Ethinyl estradiol if P is less than 0.05 or greater than 0.01.

Conclusions

Finally, the prepared cream of plantain stem juice aids in the healing of wounds. These findings provide light on the rationale for the traditional usage of this herb in wound healing remedies. It would be fascinating to do more study with other wound models. In many tropical regions, you may find a plant known as *Musa paradisiaca* Linn. The edible component of the *Musa paradisiaca* Linn. plant is the source of the tasty and nutritious fruit that people all around the globe consume. What sets these plants apart from one another are their varied microstructures and forms. The plant shows promise in treating a wide range of diseases. Researchers have studied various portions of the plant for potential pain relief, hypotension, adaptability, seizure prevention, CNS calmness, diarrhoea aid, uric acid blockage, ulcer healing, microbe killing, reduced blood sugar, cholesterol, and pressure, prevention of atherosclerosis, cell killing, blood clot breaking, fight against malaria, and neutralisation of snake venom. Supposedly, it contains carbohydrates, catecholamines, sterol glycoside, vitamins, minerals, and antioxidants. Additional research, including as clinical assessments, phytochemical analysis, and safety evaluations, may be conducted once the original data is accessible. Before the plant is utilised on actual patients, it has been the subject of some research. The

plant has the potential to aid a wide variety of diseases if scientific evidence and actual patient experiences corroborate these claims.

References

1. Singh S, Kesari A, Rai P, Watal G. Assessment of glycemic potential of *Musa paradisiaca* stem juice. Indian J Clin. Biochem. 2017;22:48-52. DOI:10.1007/BF02913313.
2. Mekonen G, Egigu M, Muthuswamy M. *In vitro* Propagation of Banana (*Musa paradisiaca* L.) Plant Using Shoot Tip Explant. Turk J Agric. Food Sci. Technol. 2021;9:2339-2346. DOI:10.24925/turjaf.v9i12.2339-2346.2883.
3. Arogundade O, Matthew J, Akinyemi SO. Macro-propagation of *Musa paradisiaca* (Plantain): Effect of bit size and growth media on sucker emergence.
4. Lavudi K, Salika H, Kokkanti R, Harika GV, Patnaik S, Penchalaneni J. Anti-tumour efficacy of *Musa paradisiaca* flower extracts on DMBA induced mammary carcinogenesis in female wistar rats. S Afr. J Bot. 2022;151. DOI:10.1016/j.sajb.2022.09.037.
5. Ramu R, Shirahatti P, H D, Naik S, Sreepathi N, Patil S, Prasad MN. Investigating *Musa paradisiaca* (Var. Nanjangud rasa bale) pseudostem in preventing hyperglycemia along with improvement of diabetic complications. J Appl. Biol. Biotechnol. 2022;10:56-65. DOI:10.7324/JABB.2022.100408.
6. Adinortey M. Wound Healing Potential of *Musa paradisiaca* L. (Musaceae) Stem Juice Extract Formulated into an Ointment.
7. Amarnath R, Balakrishnan V. Evaluation of the Banana (*Musa paradisiaca*) Plant By-product`s Fermentation Characteristics to Assess Their Fodder Potential. Int. J Dairy Sci. 2017;2:217-225. DOI:10.3923/ijds.2007.217.225.
8. Rochana A, Dhalika T, Budiman A, Kamil K. Nutritional Value of a Banana Stem (*Musa paradisiaca* Val) of Anaerobic Fermentation Product Supplemented With Nitrogen, Sulphur and Phosphorus Sources. Pak J Nutr. 2017;16:738-742. DOI:10.3923/pjn.2017.738.742.
9. A Hussain, Khan MN, Iqbal Z, Bhutta M, Khan M, Raza MA, Needham G. *In vitro* screening of the leaves of *Musa paradisiaca* for anthelmintic activity. J Anim. Plant Sci. 2010;20:05-08.
10. Us M, Mohd K, Muhammad A, Ahmad B, Mohamad M, Mat R. Taxonomical, Phytochemical and Pharmacological Reviews of *Musa sapientum* var. Paradisiaca. Res. J Pharm Technol. 2014;7:1356-1361.
11. Aakashdeep D, Kumar S, Bansal N, Upadhyay O, Kumar A, Wadhwa D, Kumar H. Phytochemical Screening and biological potentials of *Musa* × *paradisiaca* L. leaves extract as anticancer and antioxidant agents. Asia-Pacific J Pharmacother Toxicol; c2022. p. 19-27. DOI:10.32948/ajpt.2021.12.10.
12. Purnama R, Primadiamanti A. Phytochemical screening and spectrum profile of functional group from Banana (*Musa paradisiaca* L.) stem waste extract using Fourier-transform Infrared (FTIR) Spectroscopy method. J Phys. Conf Ser. 2021;1882:012106. DOI:10.1088/1742-6596/1882/1/012106.
13. Sari M, Erni M. Identification of the components by LCMS/MSQTOF and toxicity of ethanol extracts of *Musa paradisiaca* L. STEMS. Rasayan J Chem. 2021;14:1330-1335. DOI:10.31788/RJC.2021.1425969.
14. Oguche S. Evaluation of Renoprotective Potential of Plantain (*Musa parasidiaca*) Stem Juice on Rat Model Diabetes. doi:10.13140/RG.2.2.32632.93440.
15. Sari M, Tamrin, Kaban J, Alfian Z. Anti-hyperglycemic activities ethanol extract of *Musa paradisiaca* L stems and determination of its active components using GC-MS. Rasayan J Chem. 2020;13:2508-2514. DOI:10.31788/RJC.2020.1345802.