Research and Reviews: Journal of Pharmacognosy and Phytochemistry
e-ISSN: 2321-6182
p-ISSN: 2347-2332

# Review on *Malvacae* and *Rubiaceae* Family

Amit Chaudhari*, Pradip Ghogare

Department of Pharmacognosy and Phytochemistry, S.M.B.T College of Pharmacy, Nashik, India

Research Article

**Received:** 04-May-2022, Manuscript No. JPRPC-22-55865; **Editor assigned:** 06-May-2022, Pre QC No. JPRPC-22-55865 (PQ); **Reviewed:** 20-May-2022, QC No. JPRPC-22-55865; **Revised:** 04-Jul-2022, Manuscript No. JPRPC-22-55865 (R); **Published:** 14-Jul-2022, DOI: 10.4172/ 2321-6182.10.4.007.

***For Correspondence :** Amit Chaudhari, Department of Pharmacognosy and Phytochemistry, S.M.B.T College of Pharmacy, Nashik, India

**E-mail:** amitchaudhari04016@gmail.com

**Keywords:** *Malvaceae*; *Abelmoschus*; Eudicots

## ABSTRACT

The *Malvaceae*, or the mallows, in the order of Malvales, is a family of dicotyledonous flowering plants, consisting of about 244 genera with approximately 4225 species, distributed in tropical to temperate regions. Plants are herbs, shrubs, or trees, usually with stellate hairs. Stems are bastfiber robust with mucilage cavity. Leaves are simple, alternate, palmately divided, serrate, rarely entire, palmately veined, with stipules, and petiolate. Flowers are bisexual, actinomorphic, solitary, fascicled, or arranged to cymes or panicles. Epicalyx are often present, forming an involucre around calyx, three to numerous lobed. Sepals are 3–5, free or connate, valvate. Petals are five, free, rotating, adnate to staminal column at base. Stamens are numerous, filaments connate into tube, known as adelphous. Anthers are 1-celled. Pollen grains are large and spiny. Analysis of diversity, distribution and endemism of the family *Rubiaceae* for southern Assam has been made. The analyses are based on field observations in the three districts, *viz.*, Cachar, Hailakandi and Karimganj, as well as data from existing collections and literature. The present study records 90 taxa recorded from southern Assam, four of which are endemic. *Chassaliacurviflora* (Wall.) *Thwaites var. ellipsoides Hook. f.* and *MussaendakeenaniiHook.f.* are rediscovered after a gap of 140 years. *MussaendacorymbosaRoxb* is reported for the first time from northeastern India, while *Chassaliastaintonii* (H.Hara) Deb and Mondal is reported as a new record for Assam.

## INTRODUCTION

Medicinal plants, also called medicinal herbs, have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesize hundreds of chemical compounds for functions including defence against insects, fungi, diseases, and herbivorous mammals. Numerous phytochemicals with potential or established biological activity have been identified. However, since a single plant

e-ISSN: 2321-6182
p-ISSN: 2347-2332

contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any of many plants having medicinal potential remain unassessed by rigorous scientific research to define efficacy and safety [1].

In the United States over the period 1999 to 2012, despite several hundred applications for new drug status, only two botanical drug candidates had sufficient evidence of medicinal value to be approved by the Food and Drug Administration. A medicinal plant is a plant that is used to maintain health, to be administered for a specific condition, or both, and in modern medicine or in traditional medicine. The Food and Agriculture Organization evaluated in 2002 that over 50,000 medicinal plants are used across the world [2].

The Royal Botanic Gardens, Kew more unofficially estimated in 2016 that 17,810 plant species have a medicinal use, out of some 30,000 plants for which a use of any kind is documented [3,4]. The World Health Organization estimates, without reliable data, that some 80 percent of the world's population depends mainly on traditional medicine (including but not limited to plants); perhaps some two billion people are largely reliant on medicinal plants. The use of plant-based materials including herbal or natural health products with health benefits, is increasing in developed countries.

This brings attendant risks of toxicity and other effects on human health, for all the safe image of herbal remedies [5]. Herbal medicines has been in use since long before modern medicine existed; there was and often still is small or no knowledge of the pharmacological basis and their actions, if any of their safety. The World Health Organization formulated a policy on traditional medicine in 1991, and it has published guidelines for them, with a series of monographs on widely used herbal medicin (Figure 1) [6].

## LITERATURE REVIEW

### *Malvaceae*

***Abelmoschus*:**

**ScientificName:-** *Abelmoschus*-(*Hibiscus Esculentus*)

**PlantFamily:-** *Malvacea* (Mallows)

**EnglishName:-**okra, ladies' finger,

**OtherName:-**bendi, ramturai, duk

**Use:-** Digestive problems, Syphilis, Cuts, Wounds, Boils, Dysuria, Skin problems, Ardorurinae, Gonorrhoea, Dandruff.

**Figure 1.** *Abelmoschus- (Hibiscus Esculentus).*

e-ISSN: 2321-6182
p-ISSN: 2347-2332

### Chemical composition

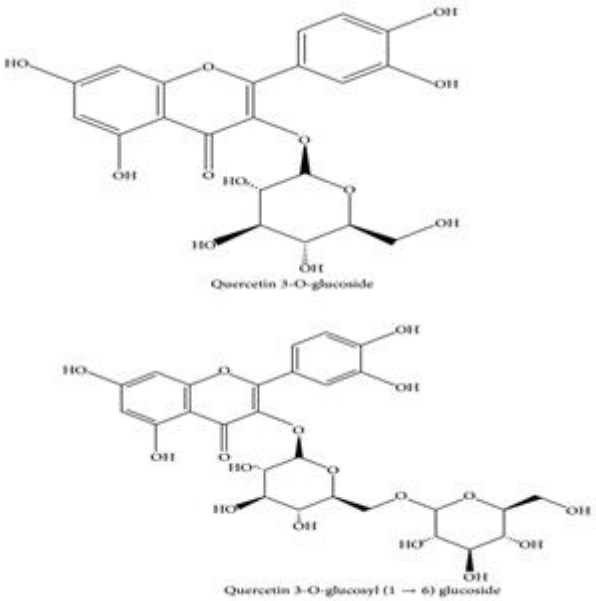
The ripe fruits contain quercetin, Hyperin, Hydrolysate of precipitated mucilage, Proanthocyanidins, D-glucose, D-glucouronic and Galacturonic acids. And Fresh flowers contain flavonol glycosides and anthocyanins [7].

### Medicinal use

The roots are rich in mucilage, having a strongly non irritating action [8,9]. This mucilage can be used as a plasma replacement. An infusion of the roots is used in the treatment of syphilis.

The juice of the roots is used externally in country in Nepal to treat cuts, wounds and boils [10,11]. An extract of the immature capsules is non irritating, diuretic and emollient. It is used in the treatment of catarrhal infections, ardorurinae, dysuria and gonorrhea [11]. The seeds are antispasmodic, cordial and stimulant [11]. An infusion of the roasted seeds has sudorific properties (causing sweat) (Figures 2,3).

**Figure 2.** *Ablemochus esculentus*.




***Malvasylvestris:***

**Kingdom:** *Plantae*
**Clade:** Eudicots
**Clade:** Rosids
**Order:** Malvales
**Family:** *Malvaceae*
**Genus:** *Malva*
**Species:** *M. sylvestris*
**Binomial name :-** *Malvasylvestris*

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 3.** *MalvaSylvestris* Kingdom; *Plantae*.

**Antibacterial**

The antibacterial activities of the plant extracts are determined against *Escherichia coli*, *Staphylococcus aureus*, *Entrococcus faecalis*, *Streptococcus agalactiae*, *Erwinia carotovora* and *Staphylococcus aureus* [12].

**Antifungal**

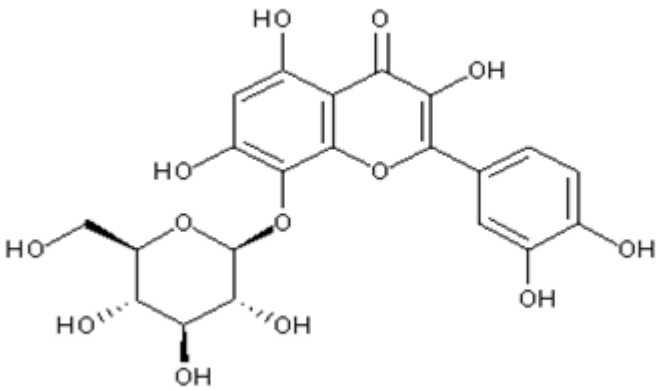
The antifungal activities of the plant extracts are determined against *Candida kefyr*, *Candida albicans*, *Aspergillus niger*, *Pinicillum SP*, and *Sclerotinia*.

**Use**

*M. sylvestris* is commonly used as vegetable and a medicinal plant in country of Iran where it is common name as Panirak. The plant of flowers are used as remedy for cut wound, eczema, dermal infected wounds, bronchitis, digestive problems, and inflammations [13-15].

Some Malva species protected rats from gastric lesions (infection) caused by ethanol. This anti- ulcer activity may be similar with the high mucilage content from the plant species. (Figures 4,5)

**Figure 4**. Mucilage.



e-ISSN: 2321-6182
p-ISSN: 2347-2332

***Abelmoschusmoschatus Medik.***
**Family** : *Malvaceae*
**Synonyms**: *Hibiscus abelmoschus Linn*.
**Kingdom**: Plantae
**Class**: Eudicots
**Sub-Class**: Rosids
**Order**: Malvales
**Family**: *Malvaceae*
**Genus**: *Abelmoschus*
**Species**: *moschatus*
**Part used**: Seed, flower, root, leaves [16]

**Figure 5.** *Abelmoschus moschatusMedik*.

**Medicinal uses**

Every part of this medicinal plant is used In India, roots, and leaves (rarely), and seeds of ambrette are considered valuable traditional medicines. The bitter, sweet, acrid, aromatic seeds are used as a tonic and are considered cooling, aphrodisiac, opthalmic, cardiotonic, digestive, stomachic, constipating, carminative, pectoral, diuretic, and stimulant. etc.

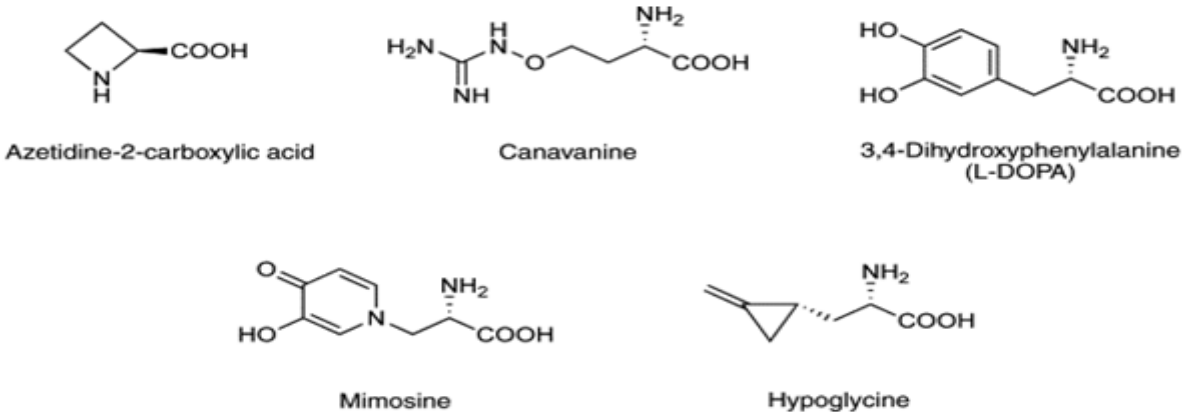
According to Unani system of medicine seeds are used to, cure stomatitis, dyspepsia, urinary discharge, gonorrhea, leucoderma and itch. Roots and leaves are cures for gonorrhoea [17].

**Chemical constituent**

Glucoside, glycoside cynadin, beta-sistosterol and beta D-glucosideglucosides are isolated from leaves [18]. The seeds are well founded for the volatile oil present in the seeds. Seed analysis report 6% (Figures 6,7).

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 6**.chemical constituent.




***Adansoniadigitata***
***(Baobab)***
**Kingdom**: *Plantae*
**Clade**: Rosids
**Order**: Malvales
**Family**: *Malvaceae*
**Genus**: *Adansonia*
**Species***: A. digitata*
**Binomial name**:- *Adansoniadigitata*

**Figure 7.** Adansoniadigitata.

Baobab products (e.g. fruits, seeds, leaves, bark) contribute to the income of many populations in Africa as it is a source of food, Africa and Senegal. Various plant parts (e.g. leaves, bark, fruit pulp), have traditionally been used for immuno-stimulant, anti-inflammatory, analgesic, insect repellent and pesticidal properties, in the treatment of diarrhoea .inmany African countries, and has been evaluated or developed as a substitute for imported western drugs some of the traditional [19].

**Medicinal use**

Baobab products (e.g. seed oil, fruit pulp) are increasingly being commercialised and exported around the world leading to increased pressure on this resource (In this review, available data on the nutritional

e-ISSN: 2321-6182
p-ISSN: 2347-2332

value, phytochemistry, biological activities of different plant parts (e.g. fruit pulp, seed oil), plant biology, ethnobotany as well as commercial aspects of baobab are presented.

**Chemical constituent**

Chemical compounds such as campesterol, cholesterol, isofucosterol, β-sitosterol, stigmasterol and tocopherol (α, β, γ, and δ) have been detected in the seed oil investigated the lipid composition of the seed oil using GC-MS. The major hydrocarbons in the seed oil were n-alkanes (57.3%) and squalene (39.5%). Fatty acids present in the seed oil include linoleic and oleic acids in high concentration as well as lesser amounts of [20] palmitic, linolenic, stearic and arachidic acids.

**Pharmacological action:**

**Anti bacterial activity**

Activity of baobab plant parts (stem and root barks) against Gram-positive bacteria, Gram-negative bacteria and yeast. The results indicated that the aqueous and ethanolic root and stem bark extracts inhibited the growth of various micro-organisms with the MIC (Minimum Inhibitory Concentration).values ranging from 1.5 to 6 mg/ml.

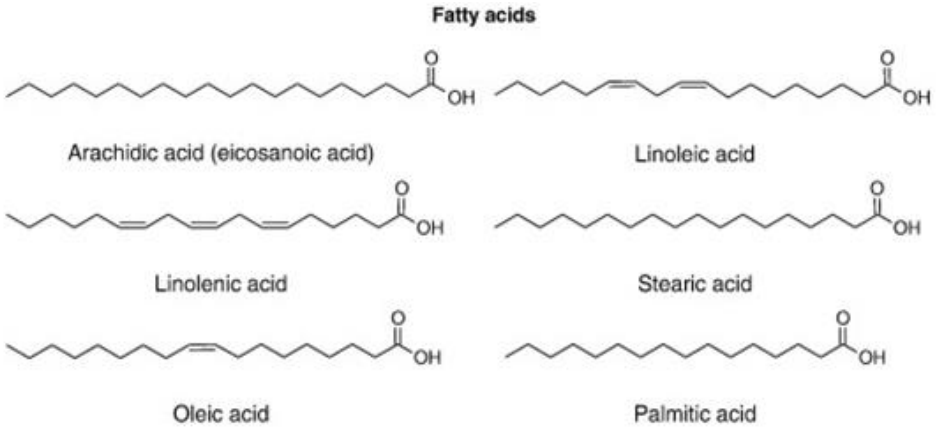
**Anti-oxidant activity**

Phenolic and flavonoid content and anti-oxidant activityPhenolic and flavonoid compounds are well known for their good anti-oxidant activity [21].

**Anti-viral activity**

Plants are against the herpes sindbis and polio viruses. Leaves, fruit-pulp and seed extracted with water, DMSO and methanol. The study has conducted using the minimum inhibitory concentration method against influenza virus (Figures 8,9).

**Figure 8.**Chemical constituent.




*Hibiscusrosa-sinensis*
**Scientific classification**
**Kingdom:** *Plantae*
**Clade:** Rosids
**Order:** Malvales
**Family:** *Malvaceae*

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Sub family**: *Malvoideae*
**Tribe**: *Hibisceae*
**Genus**: *Hibiscus*
**Binomialname**:- *Hibiscus rosa-sinensis*

**Figure 9.** *Hibiscus rosa–sinensis*.

**Medicinal applications**

Anti-bacterial activity the methanol extracts prepared from the leaves of the *H. rosa-sinensis* it is shown to have antimicrobial activities against *Pseudomonas aeruginosa*, *Escherichia coli*, *Enterobacter aerogenes*, and *Streptococcus pyogenes*. Concentration of leaves methanolic extract [21,22]. These microorganisms were obtained from infected skins, and the chemical coumpounds responsible for the antibacterial activity may be due to flavonoids, tannins, terpenoids, saponins, or alkaloids identified.

**Pharmacological activity:**

**Antioxidant activity**

Standard antioxidant, ascorbic acid produced 76.33 ± 1.25 % radical scavenging activity at 100 µg/ml concentration. It was reported that molecules identified by GC-MS (gas chromatography) and (mass spectroscopy) analysis mainly belonged to classes of alkaloids, tannins, steroids, glycosides, and flavonoids, and may be also the reason behind the high radical scavenging activity [23].

**Anti-cancer activity**

Oral cancer cell lines (ATCC CCL-17) were treated with 75 µg and125 µg of *H. rosasinensis* oil extract for 24 hours. After subjecting threated cells to DNA fragmentation assay, and using agar rosegel electrophoresis, it was observed that the cells' DNA from both concentrations has been fragmented compared to control sample. This means that Hibiscus extract hindered the growth and proliferation oforal cancer cells [24]. Acetone extracts of *H. rosasinensis* flowers effect on Hela cell lines viability was investigated. Using MTT (use for detect cellular aactivity) assay, it was found that at concentration of 1000 µg/ml resulted in only 12.96% cell viability. The presence of flavonoids, tannins, and saponins detected [25]. Methanolic leaf extracts shown a higher activity against leukaemic cancer.

**Anti-diabetic activity**

In type I diabetic mice, the alcoholic leaves extracts of Hibiscus rosasinensis was prove or show an oral hypo-glycemic agent. It reduced blood glucose levels from 281.6 ± 3.7 mg/dl [26].

**Anti-fertility activity**

e-ISSN: 2321-6182
p-ISSN: 2347-2332

*Hibiscus rosasinensis* flower methanolic extract was proven to be effective against alkaline phosphatase *in vitro* activity. Quercetin-7-Ogalactoside, which was isolated from its water soluble fraction, inhibited the enzyme activity in another study, *H. rosasinensis* powder mixed with propelyne glycol has orally subjected in albino Wister rats before mating. This treatment resulted in 98% inhibition of implants.

**Hair growth promoting activity**

The petroleum ether leaf extract of Hibiscus rosasinensis was proving to a good hair growth promoter. The alopecia has induced by exposure to sonic stress, and there were no side effects eg, erythema or edema, compared to synthetic hair growth promoting ointment [27]. The alopecia has induced by exposure to sonic stress, and there were no side effects such as erythema or edema, compared to synthetic hair growth promoting ointment.

**Neuro protective activity**

The methanolic extract of *H. rosa-sinensis* roots has beneficial effects on the central nervous system Ethanolic extract of *H. rosasinensis* roots also exhibited an important antidepressant [28].

**Wound healing property**

The treatment of *Hibiscus rosa-sinensis* flowers ethanolic extract, which contained polyphenols, tannins, carboxylic acids, triterpenoids, and alkaloids, show wound healing [29].

**Anti-inflammatory activity**

Hydroalcoholic leaves extract had ameliorative effect on 4% acetic acid induced colitis via rectal administration. The 7 days treatment Ethanol extracts of flowers and leaves.

**Immune response activity**

Aqueous extracts of flowers on immunomodulation was studied by intra peritoneally injecting 500 mg kg-1 BW of extract in male Swiss albino mice. After 15 days of treatment, cytokine IL-1a serum levels increased by 14.27% and IL-2 levels decreased by 32.70% in comparison to control group [30,31].

**Cardio protective activity**

*Rosasinensis Linn* leaves in lowered blood pressure in both hypertensive and non-hypertensive the extract increased urea and sodium levels in both groups suggesting it may interfere with kidney's function leading to more salt retention. The cardioprotective effects of ethanolic flower extracts were also investigated [32].

**Gastro protective activity**

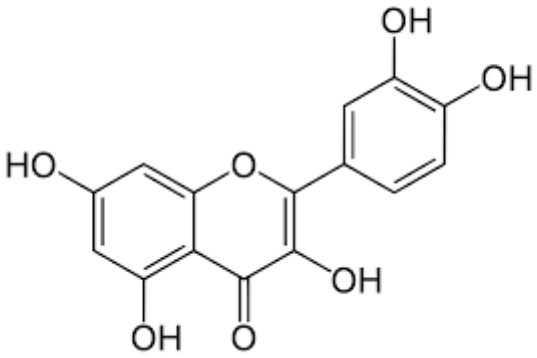
Extract of *Hibiscus rosasinensis* part that are exhibited protection of mucosal layer of gastric tissues and gastric secretion volume, free and total acidity, with an increase in gastric juice pH was observed. The extract treatment lowered ulcer index the phytochemical screening indicated that carbohydrates, sterols, flavonoid, glycosides, and tannins are present [33]. Anti-pyritic activity, Anti-hyperlipidemic activity detected.

**Chemical constituents**

The preliminary phytochemical analysis showed that Hibiscus rosa-sinensis containtannins,anthraquinones, quinines, phenols, flavanoides, alkaloids, terpenoids, saponins, cardiac glycosides, protein, freeamino acids, carbohydrates, reducing sugars, mucilage, essential oils and steroids are present (Figures 10,11) [34,35].

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 10.** Quercetin.




***Gossypium herbaceum***
**Kingdom**: *Plantae*
**Clade**: Rosids
**Order**: Malvales
**Family**: *Malvaceae*
**Subfamily**: *Malvoideae*
**Tribe**: *Gossypieae*
**Genus**: *Gossypium*

**Figure 11.***Gossypiumherbaceum.*

**Medicinal use**

Cotton is an astringent, slightly acidic, aromatic herb that causes uterine contractions, depresses sperm production, lowers fever, reduces inflammation and soothes irritated tissue [36,37]. It also has antiviral and antibacterial actions [38]. The root bark contains gossypol and flavonoids [39]. It is seldom used in modern herbalism, but has been used as a milder and safer alternative to ergot (*Claviceps purpurea*) for inducing uterine contractions in order to speed a difficult labour [39]. It can induce an abortion or the onset of a period, and reduces total menstrual flow. It has also been taken internally in the treatment of painful menstruation. The root bark also encourages an increased milk flow in nursing mothers and blood clotting. The roots are harvested at the end of the growing season, peeled and dried. The seeds are taken internally in the treatment of dysentery, intermittent fever and fibroids. Externally, the seeds are used to treat herpes, scabies, wounds and orchitis. The oil obtained from the seed contains a substance known as gossypol. This has the effect of lowering sperm production and possibly causing infertility in males. Research has been carried out into its potential use as a male contraceptive. It can be used to reduce heavy menstrual flow and in the treatment of endometriosis. The leaves are taken internally in the treatment of gastroenteritis.
Externally, the leaves are used to treat thrush, scalds, bruises and sores. The leaves are harvested as required during the growing season.

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Other uses**

The floss contained in the seedpod is used to make fibre for clothing and many other applications. Cotton fibres have a wide range of used including making clothes; rubber-tyre fabrics; stuffing material for pillows, cushions etc. surgical dressings; making twine and ropes; carpets Etc.

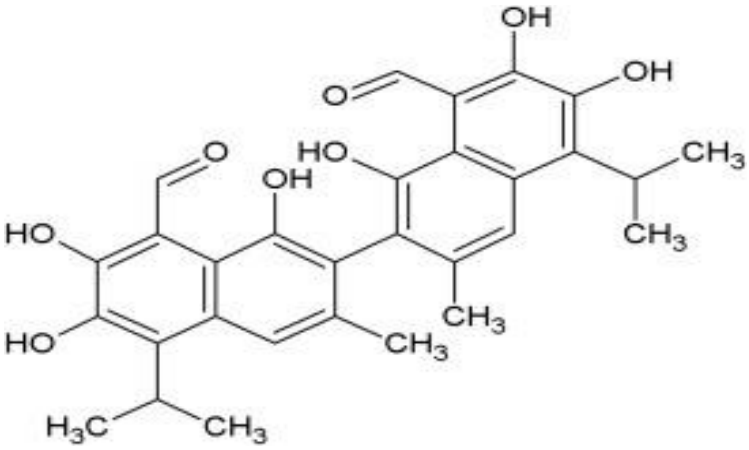
An extract of the seedcake is used as an ingredient in commercial cosmetic preparations as a skin conditioner and UV absorber.

**Chemical constituent**

Phytochemical constituents of seed

**Organic**: The cotton seeds contain glycosides, steroids, resins, saponins, carbohydrates, proteins and phenolic compounds tannins. It contains an adequate amount of other essential amino acids. The biological value anti-gestability of the total proteins of cotton seeds are 91 and 78respectively. The mineral constituents of the cotton seed are phosphorus for that (Figures 12,13).

**Figure 12.** *Gossypol.*




***Althaea officinalis***

**Kingdom**: *Plantae*
**Clade**: Rosids
**Order**: Malvales
**Family**: *Malvaceae*
**Genus**: *Althaea*
**Species**: *A. officinalis*
**Binomial name**:-*Althaea officinalis*
Phytochemicals

**Figure 13.** *Althaea officinalis.*

**Chemical constituents include**

Althea hexacosanyl lactone (n-hexacos-2-enyl-1,5-olide), 2β-hydroxy calamene (althea calamene)

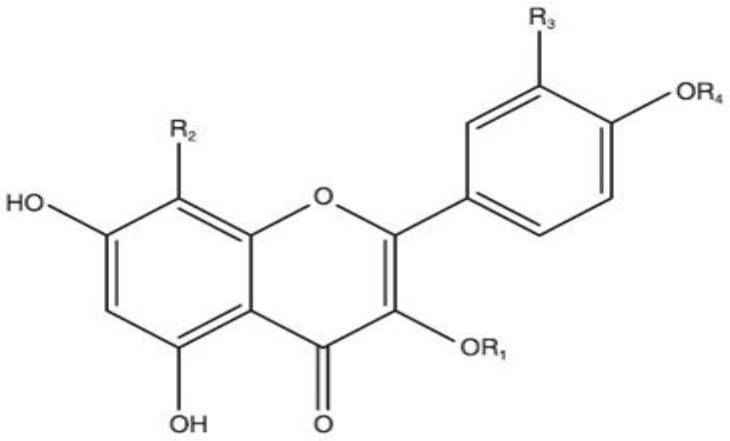
e-ISSN: 2321-6182
p-ISSN: 2347-2332

and althea coumaringlucoside (5,6-dihydroxycoumarin-5-dodecanoate-6β-D-glucopyranoside), along with the known phytoconstituents lauric acid, β-sitosterol and lanosterol [40].

**Medicinal uses**

Althea officinalis is widely used in the irritation of oral, pharyngeal mucosa and associated drycough, mild gastritis, skin burns and for insect bites. It is also used in catarrh of the mouth, throat,gastrointestinal tract and urinary tract, as well as for inflammation, ulcers, abscesses, burns, constipation anddiarrhea (Figures 14,15) [41].

**Figure 14.** Chemicical constituent.




Chemical structures of compounds 1–5. Compound 1: $R_1$=β-D-glucuronic acid, $R_2$=C-β-D-glucose, $R_3$=OH, $R_4$=H; compound 2: $R_1$=β-D-rutinoside, $R_2$=H, $R_3$=H, $R_4$=H; compound 3: $R_1$=H, $R_2$=H, $R_3$=H, $R_4$=β-D-glucose; compound 4: $R_1$=β-D-glucose, $R_2$=H, $R_3$=H, $R_4$=H; compound 5: $R_1$, $R_2$, $R_3$, $R_4$=H.

**Durian**
**Kingdom**:-*Plantae*
**Clade**:- Rosids
**Order**:-Malvales
**Family**:-*Malvaceae*
**Subfamily**:-*Helicteroideae*
**Tribe**:- *Durioneae*
**Genus**:- *Durio*
**Typespecies**:- *Duriozibethinus*

**Figure 15. Durian.**

**Medicinal use**

Durian is rich in macronutrients (sugars and fat) and micronutrients (potassium), dietary fibers, and bioactive and volatile compounds. An intake of one serving size of durian aril (155 g) contributes to 130 to 253 kcal and is equivalent to one large pear and four small apples without skin, respectively. Durian is energy-dense due to sugar and fat content and hence, might contribute to daily energy intake and will also increase postprandial blood glucose [42].

e-ISSN: 2321-6182
p-ISSN: 2347-2332

## Pharmacological action

### Effects of durian on blood glucose

Durian is high in sugar, but supplementation of 5% freeze-dried monthong (Thailand variety) in 1% cholesterol-enriched diets in rats for 30 days did not raise the plasma glucose level compared with control diet In humans, showed that durian had the lowest glycemic inde x (GI=49) compared with watermelon (GI=55), papaya (GI=58), and pineapple (GI=90) The low GI value for durian might be due to the presence of fiber and fat. Fiber slows digestion in the digestive tract and will slow down the conversion of the carbohydrate to glucose, thus lower the GI of food Fat does not have a direct effect on blood glucose response, but it may influence glycemic response indirectly by delaying gastric emptying, and thus slowing the rate of glucose absorption [43-45]. Evidence has shown that potassium content in durian might play a role in the regulation of blood glucose. The effect of durian on blood glucose has not been thoroughly explored both in animal and human studies, and hence, warrants further investigation. Potassium might play a role in glucose homeostasis but might also have negative implications in certain conditions. For instance, those with chronic kidney disease, diabetes mellitus, and heart failure or on pharmacological therapies may develop hyperkalaemia.

### Cholesterol-lowering properties of durian

Anti-atherosclerotic properties of durian aril have been reported in experimental rat models Previous in vitro and in vivo studies investigated the health benefits of durian (monthong variety) on lipid profiles.

### Liver protection

In durian found that the alcohol extract of durian shell can significantly reduce the plasma activity in restrained-loaded mice, effectively reduce the plasma MDA level and liver tissue NO content of restrained-loaded mice, and it also has an effect on the content of glutathione in liver tissue with a certain degree of improvement. It indicated that the alcohol extract of durian shell has a certain protective effect on stress liver injury in mice induced by restraint load, and its mechanism may be related to scavenging free radicals and reducing the level of oxidative stress in restrained load mice.

### Regulating immune function

It is found that polysaccharide of durian shell can regulate the immunity of immunosuppressive mice induced by cyclophosphamide, inhibit the content of SCFAs in mice, and improve metabolic pathways such as glucose metabolism, amino acid and lipid metabolism by reducing the relative abundance of *Ruminococcus* and *Oscillospira*, increasing the relative abundance of the beneficial bacteria *Akkermansia*, *Bacteroides*, *Paraprevotella*, improving the composition of the intestinal flora.

### Antipruritic effect

External use of durian shell has the effect of curing skin itching, and some researchers use it as the main raw material to make an ointment for external use.

### Chemical constituent

Chemical structures of phenolic acids and phenolic glycosides in durian shell.

### Simple glycosides

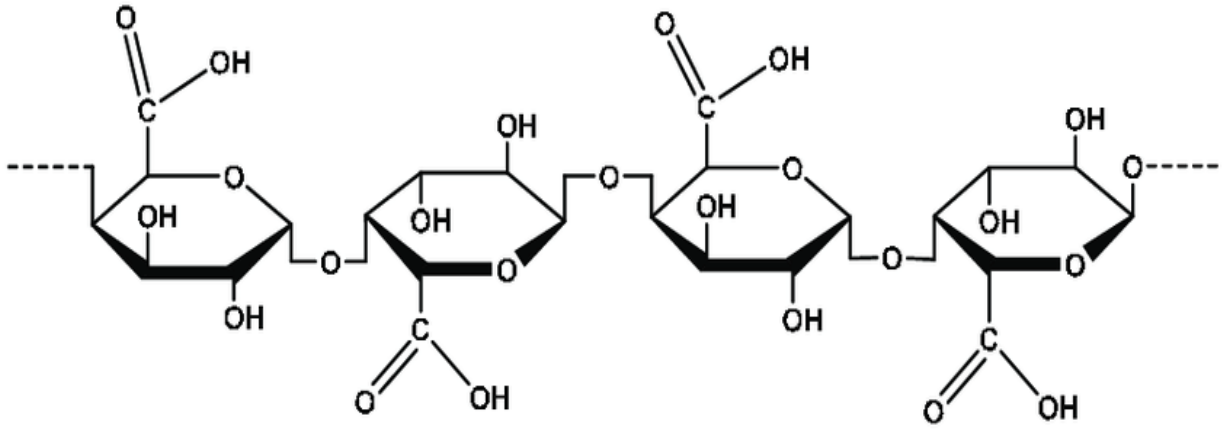
In this processed durian skin with water extraction and then alcohol precipitation method, deproteinization, depigmentation, and small molecular substances to obtain 42.28 g of durian skin crude polysaccharides, with an extraction rate of 1.41%. After the raw sugar was purified, it was found that the total sugar content of durian skin polysaccharide components DZM-A and DZM-B increased significantly, especially the total sugar content of DZM-A reached 93.65%, and its structure was a pectin polysaccharide.

### Volatile components

Durian used a steam distillation to extract the volatile chemical components of fresh durian shell and analyzed them by capillary gas chromatography-mass spectrometry. It was found that the isolated compounds were mainly alkanes, alcohols, aromatic and aromatic heterocyclic compounds and esters, which accounted for 95.97% of the total oil (Figures 16,17).

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 16.** polygalacutronic acid.



***Rubiaceae***
***Coffea***
**Kingdom**:- *Plantae*
**Clade**:- Asterids
**Order**:- Gentianales
**Family**:-*Rubiaceae*
**Tribe**:- *Coffeeae*
**Genus**:- *Coffea*
*Coffea Arabica*

**Figure 17.** *Coffea.*

**Medicinal use**

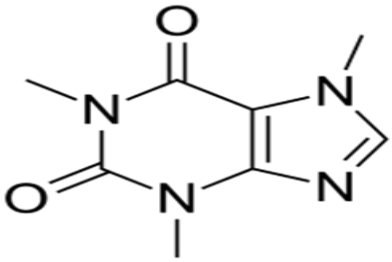
In medicinal use when disease use liver disease, hepatitis c, and hepatitis b protect from liver disease:- Coffee drinking lower 40% risk of liver cancer and15% of colorectal cancer and prostate cancer. Protect from brain disease:- Coffee consumption protects against 65 or more age people from Alzheimer's disease and dementia. It lower 65% risk of Alzheimer's disease Coffee consumption can fight stress and make active our brain and it has beneficial to on mood, cognitive function, performance.

**Chemical constituent**

The main constituents of coffee are caffeine, tannin, fixed oil, carbohydrates, and proteins. It contains 2–3% caffeine, 3–5% tannins, 13% proteins, and 10-15% fixed oils. In the seeds, caffeine is present as a salt of chlorogenic acid. Also it contains oil and wax.etc (Figures 18,19).

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 18.** caffeine.



**Quina**
**Scientific classification**
**Kingdom**: *Plantae*
**Clade**: Asterids
**Order**: Gentianales
**Family**: *Rubiaceae*
**Sub family**: *Cinchonoideae*
**Tribe**: *Cinchoneae*
**Genus**: *Cinchona*

**Figure 19.** Quina.

**Medicinal use**

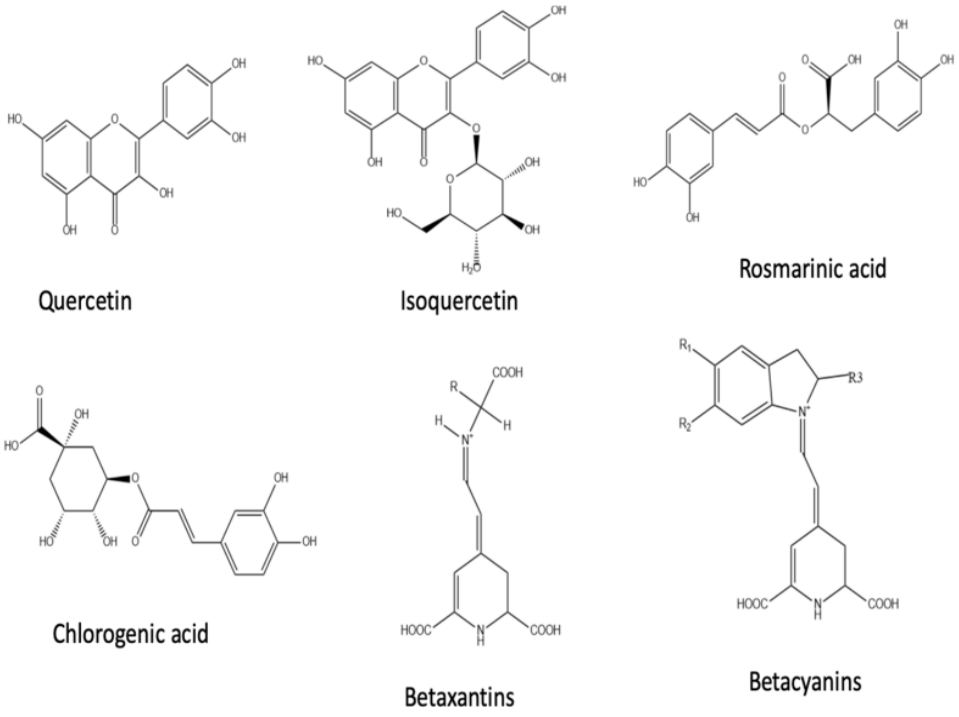
It is use, especially as a treatment for fevers and malaria. The bark is made into various preparations, such as tablets, liquid extracts, tinctures and powders. It is used internally in the treatment of malaria, neuralgia, muscle cramps and cardiac fibrillation. It is also used as a gargle to treat sore throats.

**Chemical constituent**-

The herb, especially in the form of the extracted alkaloid quinine. The amino acids profile was carried out on the precipitated protein from defatted quinoa after hydrolysis bark contains various alkaloids, particularly quinine and quinidine. Up to 70 to 80% of the total alkaloids contained in the bark are quinine (Figures 20,21).

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Figure 20.** Cgemical constituent.




**West indian jasmine**
*Ixora coccinea*
**Kingdom:** *Plantae*
**Clade:** Asterids
**Order:** Gentianales
**Family:** *Rubiaceae*
**Sub family:** *Ixoroideae*
**Tribe:** *Ixoreae*
**Genus:** *Ixora*

**Figure 21.** West indian jasmine

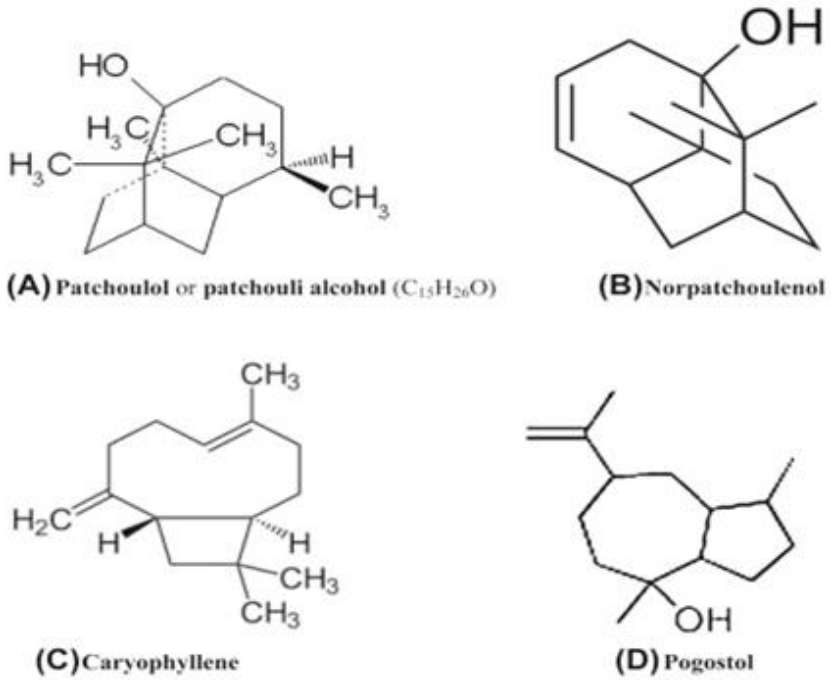
**Medicinl use:** It mostly use in liver disease.
**Pharmacological effect**
**Anti-neoplastic Effect**:- The extract reduced the murine ascitic tumour growth and increased survival timethe lymphocytes of leukaemic patients, acute lymphoblastic leukaemia, chronicmyelogenous leukaemia, and K-562 cell cultures but not with the normal lymphocytes,suggesting the cytotoxic effect to be specific only to neoplastic and transformed cells1 Mechanistic studies also showed that the extract was effectivein inhibiting the incorporation of tritiatedthymidinecellular DNA, suggesting that the extract contains compounds.
**Antimicrobial Effects**:- Antimicrobials, especially the antibiotics and antifungal agents, are mostly used in

e-ISSN: 2321-6182
p-ISSN: 2347-2332

thetreatment of various medical conditions.

**Chemical constituent:-** Essential coccinea flower was obtained by hydrodistillationoil of Ixora *coccinea* flower, representing 99.97%.Ixora coccinea flower is of ursolic acid chemotype. Geranyl Acetate oil of Ixora (8.74%) (Figures 22,23).

**Figure 22.** Westindian jasmine




***Gardenia***

Gardenia jasminoides

Scientific classification

**Kingdom:** *Plantae*

**Clade:** Asterids

**Order:** Gentianales

**Family:** *Rubiaceae*

**Sub family:** *Ixoroideae*

**Tribe:** *Gardenieae*

**Genus:** *Gardenia*

**Figure 23.** *Gardenia.*

**Medicinal use**

Antigastritic activity G. jasminoides-ethanolic extracts had a protective effect againstpotential gastric disease. This action may attributable to theursolic acid and genipinAntigastritic activity G. jasminoides-ethanolic extracts had protective effect againstpotential gastric diseases. This action may attributable to theursolic acid and genipin.

**Antiarthritis**

Geniposide had positive effects on rats with adjuvant arthritisbydownregulating the Geniposide also suppressedarthritis in adjuvant-induced arthritis rats by decreasing theexpression levels of tumor

e-ISSN: 2321-6182
p-ISSN: 2347-2332

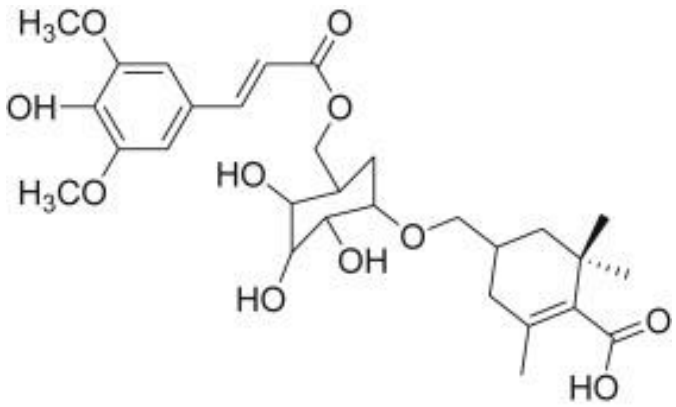
necrosis factor-a, interleukin (IL)-1b, and IL-6, increasing the production of IL-10.

**Chemical constituent**:-

Antimicrobial Antibacterial and antimycotic activities of isolated compounds were performed against four bacterial strains (*Salmonella Typhimurium*, *Pseudomonas aeruginosa Escherichia coli,* and *S. Typhi* isolate) antimycotic:- four strains of yeast (*Candida albicans, Candida parapsilosis, Candida krusei* and *Candida albicans* isolate).

Nonacosane, heptatriacontanol, Docosanol, D-mannitol , D-mannitol acetate and a mixture of β-sitosterol , stigmasterol and fucosterolstigmasterol (Figures 24,25).

**Figure 24.** Glucopyranoside.




**Galiumaparine**

Scientific classification

**Kingdom**: *Plantae*
**Clade**: Asterids
**Order**: Gentianales
**Family**: *Rubiaceae*
**Genus**: *Galium*
**Species**: *G. aparine*
**Binomial name:**-*Galiumaparine*

**Figure 25.** Galiumaparine.

**Medicinal use**

It was eaten as a vegetable. Their seed was roasted to prepare a sort of coffee substitute. It was also used in traditional medicine as an infusion to treat kidney problems, skin disorders and high blood pressure used for the treatment of skin disorders. It was also used for the treatment of stranguria with turbid urine, hematuria, traumatic injury, acute appendicitis, furuncle and otitis media.

**Chemical constituent**

The preliminary phytochemical screening of ethyl acetate and methanol extracts of Galiumaparinearial parts revealed that the plant contained phenols, tannins, alkaloids, anthraquinones, coumarins, iridoidsasperuloside, alkanes, flavonoids and saponins.

e-ISSN: 2321-6182
p-ISSN: 2347-2332

**Antimicrobial effects**

The ethanolic extracts of Gallium species were tested for the antimicrobial activity against two grampositive bacterial strains *Staphylococcus aureus*, *Listeria.*

The antibacterial and antifungal activities of Galiumaparine herb lipophilic complex were investigated against *Staphylococcus aureus, Escherichia coli.*

**Antioxidant effects**

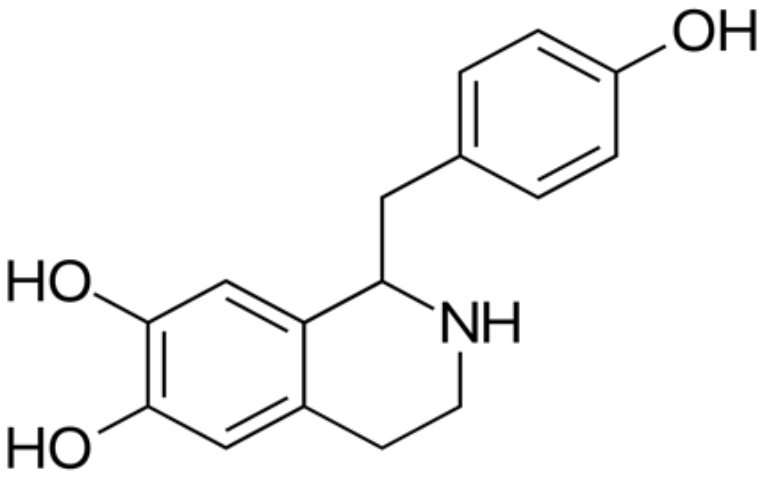
The *in vitro* antioxidant activity of ethanol extract of Gallium aparine was evaluated using was assessed by the DPPH radical bleaching method. The ethanol extract of Gallium aparine showed high radical scavenging activity.

**Anticancer effects**

Anticancer effects were determined against human breast cancer cells human colon cancer and human peripheral lymphocytes. Ethyl acetate showed higher cytotoxic and apoptotic effect on human peripheral lymphocytes compared to methanol extract. Structure chemical constituent (Figures 26,27).

## RESULTS AND DISCUSSION

**Figure 26.** Higenamine.




***Mussaenda***

***Mussaenda frondosa***

Scientific classification

**Kingdom**: *Plantae*
**Clade**: Asterids
**Order**: Gentianales
**Family**: *Rubiaceae*
**Subf amily**: *Ixoroideae*
**Tribe**: *Mussaendeae*
**Genus**: *Mussaenda*

**Figure 27.** *Mussaenda.*

e-ISSN: 2321-6182
p-ISSN: 2347-2332

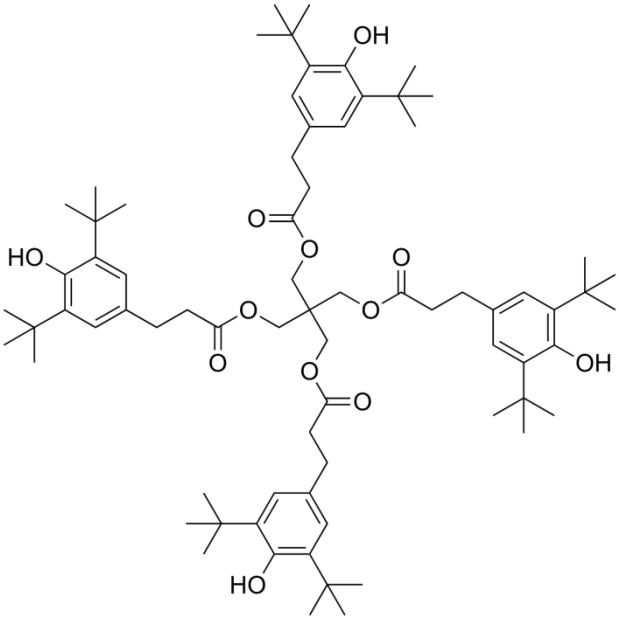
**Medicinal use**

The juice of the plant is used to treat eye infections. A decoction of the leaves is used to rid the body of intestinal worms.The root is used as a treatment for leprosy juice of the bark is used in the treatment of body ache, diarrhoea and dysentery.They are used in the treatment of cough.

**Chemical constituent**

Under shrub Mussaendaincana Wall (*Rubiaceae*) is grown wild in the forest area of North Eastern States. It is noticed by the visitors in the forest for its beautiful golden yellow flowers in terminal corymbose cymes. In traditional system of medicines, stem-extract is used externally as detergent to ulcers and treatment of white leprosy. Earlier investigation on the stem of this plant led to the isolation of triterpene esters, 3-palmitoyllupeol, 3-benzoylepi betulin and B-sitosterol. Our continued search for other compounds from the stem of the plant has resulted in the isolation of shanzhilactone 1, mussaenoside, barlerin, lupeol and B-D-glucose. Herein, we report the isolation and characterization of these compounds (Figures 28,29).

**Figure 28.** 3,5-di-tetrt-butyl-4-hydroxyhydrocinnamate.



e-ISSN: 2321-6182
p-ISSN: 2347-2332

***15.Hydnophytum***
Scientificclassificatione
**Kingdom**: *Plantae*
**Clade**: Asterids
**Order**: Gentianales
**Family**: *Rubiaceae*
**Sub family**: *Rubioideae*
**Tribe**: *Psychotrieae*
**Genus**: *Hydnophytum.*

**Figure 29.** *Hydnophytum.*

**Medicinal use**
**Uses**

Folkloric decoction of swollen, woody base used as remedy for liver and intestinal complaints. In the Dutch Indies, poultice of pounded tubers used for headaches. In Indonesia, used to treat swelling, headaches and rheumatism. Decoction of rhizomes used for cholera. In Thailand, used for the treatment of cancer. In Vietnam, tubers used for the treatment of rheumatism liver and intestinal diseases.

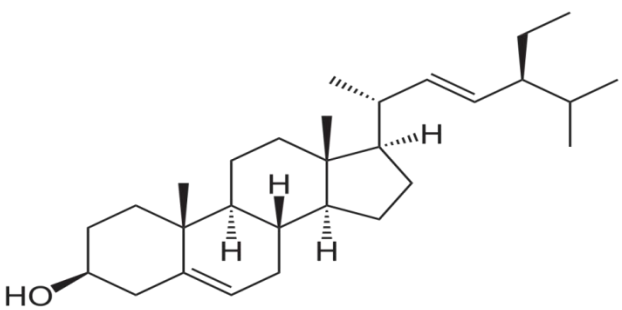
**Antimicrobial use**

The crude hexane, dichloromethane, ethyl acetate and methanol extracts, and the isolates 3-5 from Hydnophytum formicarum Jack. Were tested for antimicrobial activity against 27 strains of microorganisms.

**Chemical constituent**

The *H. formicarum* extract reveals different flavonoids and phenolic compounds by UV and NMR detection (stigmasterol: 1, isoliquiritigenin: 2, protocatechualdehyde: 3, loot: 4 and butein: 5[64] contains flavonoids and tannins.
Ethanol extract has yielded histone deacetylase inhibitors reported to have anticancer properties. Study of fine powders of young tubers isolated four compounds: sinapinic acid, β-sitosterol acetate, β-sitosterol and stigmasterol.
Tuber extracts yielded 22 elements: Be, Al, Ca, Cr, Mn, Fe, Zn, Ba, P, Li, Sr, Rb, Hg, Tl, In, Pb, Cd, As, Cs, Na, K and Mg. (see study below).
Phytochemical screening of ethanol extract of folium yielded alkaloid, terpenoid, tannin, glycoside, and saponin; cortex yielded alkaloid, flavonoid, terpenoid, and glycoside.
Chromatographic study of methanol extract of fine powers from young tubers yielded two new compounds, namely: hydnophaldehyde [4,4′,10′,13′,14′-pentamethylgona-7′,9′(11′)-dien-17′-yl(6)-2,2-dimethylheptanal] (1) and 2-(2′-methoxyphenyl) (Figure 30).

**Figure 30.** Stigmasterol.



## CONCLUSION

The study conclude that the plant ewhich comes under *Malvacae* and *Rubiaceae* show action: (Anti-neoplastic effect, Antimicrobial effects, Antioxidant effects, Anticancer effects, antipruritic effect,

Chemical constituent:- Compounds such as campesterol, cholesterol, isofucosterol, β-sitosterolphenols, tannins, alkaloids, anthraquinones, coumarins, iridoidsasperuloside, alkanes, flavonoids, caffeine, tannin, fixed oil, carbohydrates, and proteins.

## REFERENCES

1. Carrubba A, et al. The scent of Mare Nostrum: medicinal and aromatic plants in Mediterranean soils. J Sci Food Agric. 2012;92:1150-1170.
2. Dharmananda S, et al. The Methods of preparation of herb Formulas: decoctions, dried decoctions, powders, pills, tablets, and tinctures. Institute of Traditional Medicine, Portland, Oregon. 1997.
3. Mount T, et al. 9 weird medieval medicines. British Broadcasting Corporation. 2015.
4. Pezzuto JM, et al. Plant-derived anticancer agents. Biochem Pharmacol. 1997;53:121-33.
5. World Health Organization. Traditional medicine. Fact sheet no. 134. Geneva: World Health Organization. 2008.
6. Manandhar NP, et al. Plants and people of Nepal. Timber press; 2002.
7. Chopra RN, et al. Glossary of Indian medicinal plants (including the supplement), Council. Sci Ind Res. New Delhi, India. 1986.
8. Razavi SM, et al. Bioactivity of aviprin and aviprin-3 ″-O-glucoside, two linear furanocoumarins from *Apiaceae*. Russ J Bioorganic Chem. 2010;36:359-362.
9. Gürbüz I, et al. Anti-ulcerogenic activity of some plants used in folk medicine of Pinarbasi (Kayseri, Turkey). J Ethnopharmacol. 2005;101:313-318.
10. Pirbalouti AG, et al. Evaluation of burn healing properties of *Arnebia euchroma* and *Malva sylvestris*. Electron J Biotechnol. 2009;5:62-6.
11. Jain SK, et al. Dictionary of Indian folk medicine and ethnobotany. 1991.
12. Chopra RN, et al. Glossary of Indian medicinal plants
13. Yazzie D, et al. The amino acid and mineral content of baobab (*Adansonia digitata L.*) leaves. J Food Compos Anal. 1994;7:189-93.
14. Glew RH, et al. Amino acid, fatty acid, and mineral composition of 24 indigenous plants of Burkina Faso. J Food Compos Anal. 1997;10:205-217.
15. PLANT L. The Plant List, a working list of all plant species.

16. Hemarana K, et al. Preliminary bioactive compounds screening and antibacterial activity of methanolic extract of *Hibiscus rosasinensis* against selected skin pathogens. Res J Pharm Biol Chem Sci. 2014;5:1210-1218.

17. Ghosh A, et al. GC-MS analysis and study of potential antioxidant activity of the crude ethanolic flower extract of *Hibiscus rosa sinensis L* (wild variety) by hydrogen peroxide scavenging assay. Int J recent trends sci technol. 2017;7:20405-20410.

18. Hinaz N, et al. Genotoxicity of *Hibiscus rosa sinensis* on oral cancer cell line. Int J Pharm Sci Rev Res. 2017;44:21-23.

19. Kumar PS, et al. Evaluation of in-vitro anticancer activity of Hibiscus rosa sinensis against hela cell line. J Glob Pharma Technol. 2018;6.

20. Moqbel FS, et al. Antidiabetic properties of *Hibiscus rosa sinensis L*. leaf extract fractions on non-obese diabetic (NOD) mouse.

21. Pathan A, et al. Effect of Hibiscus rosa sinensis, Calotropis gigantea and Polyherbal formulation on stress induced alopecia. Int J Pharma Bio Sci. 2013;2:20-29.

22. Nade VS, et al. Neuropharmacological evaluation of Hibiscus rosa sinensis roots in experimental animals. J Nat Remedies. 2009;9:142-151.

23. Shivananda Nayak B, et al. Effects of *Hibiscus rosa sinensis L* (*Malvaceae*) on wound healing activity: a preclinical study in a Sprague Dawley rat. Int J Low Extrem Wounds. 2007;6:76-81.

24. Kandhare AD, et al. Effect of hydroalcoholic extract of Hibiscus rosa sinensis Linn. Leaves in experimental colitis in rats. Asian Pac J Trop Biomed. 2012;2:337-344.

25. Raduan SZ, et al. Anti-inflammatory effects of *Hibiscus rosa-sinensis L*. and *Hibiscus rosa-sinensis var. alba* ethanol extracts. Int J Pharm Pharm Sci. 2013;5:754-762.

26. Mishra N, et al. Immunomodulation by *Hibiscus rosa-sinensis*: effect on the humoral and cellular immune response of *Mus musculus*. Pak J Biol Sci. 2012;15:277-283.

27. Kate IE, et al. The effects of aqueous extracts of the leaves of Hibiscus rosa-sinensis Linn on renal function in hypertensive rats. Afr J Biochem Res. 2010;4:43-46.

28. Mandade RJ, et al. Pharmacological effects of aqueous–ethanolic extract of Hibiscus rosasinensis on volume and acidity of stimulated gastric secretion. Asian Pac J Trop Med. 2011;4:883-888.

29. Kumari OS, et al. Phyto-chemical analysis and antimicrobial activity of Hibiscus rosa-sinensis. World J Pharm Pharm Sci. 2015;4:766-771. [Google Scholar]

30. Divya MJ, et al. Screening of antioxidant, anticancer activity and phytochemicals in methanolic extract of *Hibiscus rosa-sinensis* leaf extract. Res J Pharm Biol Chem Sci. 2013;4:1308-1316.

31. List BS, et al. Botanical Society of Britain and Ireland. Archived from the original (xls) on 2015-01-25. 2007.

32. Rani S, et al. Phytochemical investigation of the seeds of *Althea officinalis L*. Nat Prod Res. 2010;24:1358-1364.

33. Belgis M, et al. Physicochemical differences and sensory profiling of six lai (*Durio kutejensis*) and four durian (*Durio zibethinus*) cultivars indigenous Indonesia. Int Food Res J. 2016;23.

34. Leontowicz M, et al. The nutritional and metabolic indices in rats fed cholesterol-containing diets supplemented with durian at different stages of ripening. Bio Factors. 2007;29:123-136.

35. Robert SD, et al. Glycemic index of common Malaysian fruits. Asia Pac J Clin Nutr. 2008;17.

36. Maćkowiak K, et al. Dietary fibre as an important constituent of the diet. Advances in Hygiene and Experimental Medicine/Postepy Higieny i Medycyny Doswiadczalnej. 2016;70.

37. Haruenkit R, et al. Comparative study of health properties and nutritional value of durian, mangosteen, and snake fruit: experiments *in vitro* and *in vivo*. J Agric Food Chem. 2007;55:5842-9.

38. Aggarwal BB, et al. Molecular targets of nutraceuticals derived from dietary spices: potential role in suppression of inflammation and tumorigenesis. Exp Biol Med. 2009 ;234:825-849.

39. Obuzor GU, et al. Chemical composition of essential oil of *ixora coccinea* flower from Port Harcourt, Nigeria. Int J Acad Res. 2011;3:381-384.

40. Lari P, et al. Evaluation of diazinon-induced hepatotoxicity and protective effects of crocin. Toxicol Ind Health. 2015;31:367-376.

41. Tripathi SK, et al. Isolation and characterization of 5-ethylhentriacontane and nonacosane from Salvia plebeia. Asian J Chem. 2006;18:1554.

42. Vlase L, et al. Comparative study of polyphenolic content, antioxidant and antimicrobial activity of four Galium species (*Rubiaceae*). Dig. J Nanomater Biostructure. 2014;9:1085-1094.

43. Aslantürk ÖS, et al. Active phytochemical detecting, antioxidant, cytotoxic, apoptotic activities of ethyl acetate and methanol extracts of *Galium aparine L*. Br J Pharm Res. 2017;15:1-6.

44. Shi G, et al. Separation and purification and *in vitro* anti-proliferative activity of leukemia cell K562 of *Galium aparine L*. Petroleum ether phase. Saudi Pharm J. 2016;24:241-244.

45. Prachayasittikul S, et al. Antimicrobial and antioxidative activities of bioactive constituents from Hydnophytum formicarum Jack. Molecules. 2008;13:904-921.