

REFERENCES

HIBISCUS

Hibiscus abelmoschus

Abelmoschus moschatus Medic.

1. Lust in his book (B8) refers to hibiscus as Musk-Mallow, Musk seed plant, rose mallow, Syrian Mallow, target-leaved hibiscus or Water mallow. It is an annual or biennial plant which grows wild in Egypt, India and the East and West Indies. It is antispasmodic, nervine, stomachic. An emulsion made from the seeds is said to be useful for spasmodic problems. An emulsion made from the milk can be used for itchy skin. In Egypt, the seeds are chewed to relieve stomach problems, to soothe the nerves, and to "sweeten" the breath. Egyptians also consider the seeds to have aphrodisiac powers.

The reference goes on to mention other members of the family:-Hibiscus bancroftianus - an herbaceous plant of the West Indies which is used like althea.

Hibiscus esculentus - okra, gumbo; found in the tropics of the Old World. Both roots and fruit are used as demulcents, the leaves as emollient poultices. *Hibiscus palustris* - Marsh Hibiscus; found in the swamps of the eastern U.S. Used like Althea.

Hibiscus rosa-sinensis - rose of China, Chinese Hibiscus. Grown mainly for ornament, this shrub or small tree also has astringent and demulcent properties. A decoction of the roots is used as an eyewash in Malaya; the bark is used in Asia as an emmenagogue; the flowers are said to be astringent. *Hibiscus sabdariffa* - Guinea Sorrel, Jamaica sorrel, roselle; a tall annual plant found in the tropics of the Old World. The herb is useful as a diuretic and refrigerant.



Hibiscus sagittifolius - a perennial herb found in Indochina. The root is said to be highly effective against excessive mucous discharge (blenorragia). *Hibiscus surattensis* - a trailing shrub found in the tropical countries of Asia and Africa. It is used to soothe coughs and as an emollient. *Hibiscus tiliaceus* - corkwood, Cuban bast, mahoe; a shrub or tree found in tropical countries.

The inner bark has mucilaginous and emollient properties *Hibiscus trionium* - flower of an hour, Venice Mallow, originally from central Africa, now found as a weed in North America. The plant has mucilaginous and emollient properties.

2. Lel (B10) refers to *Hibiscus abelmoschus* which is an evergreen shrub with very large

sulphur-yellow flowers based with purple. The Arabians add the seeds to their coffee and flavour soups with them. Medicinally the seeds are given for a hoarse voice.

They are said to have aphrodisiac properties. In India where the musk plant is common, a tincture prepared from the seeds is much valued as an antispasmodic medicine, and is extensively prescribed for hysteria and nervous disorders.

3. Stuart refers to (B28) *Hibiscus sabdariffa* or Roselle, Sudanese Tea, Red Tea, Jamaica Tea. *Hibiscus* is the old latin name for this plant which was introduced into Jamaica and used as an acid flavouring at least as early as 1774. It contains

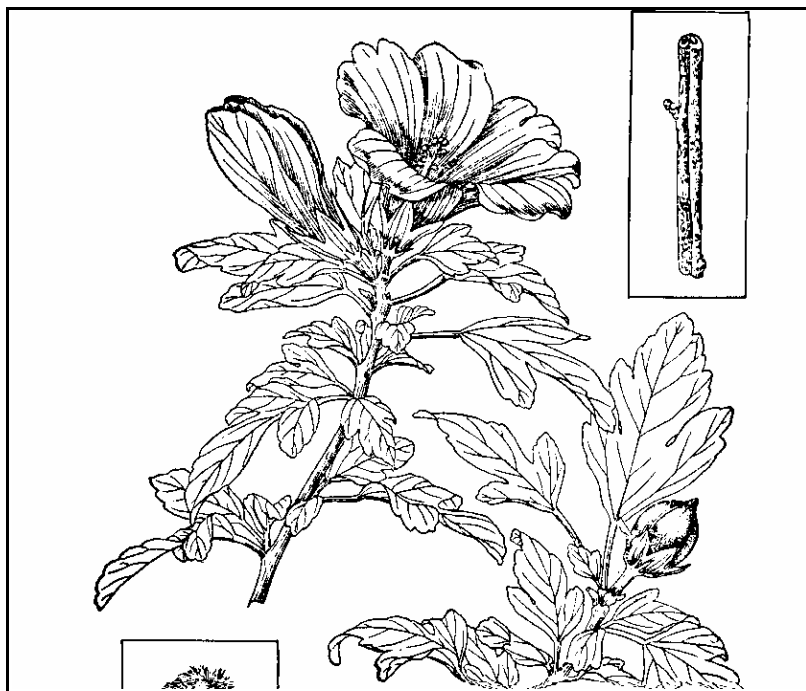
organic acids, comprising tartaric, citric, malic and hibiscic acids; red pigment comprising gossipetin and hibiscin; vitamin C; and also glucosides and phytosterolin. It is used as a diuretic; weak laxative and antiscorbutic. It is used in Africa and Asia as a cough remedy, wound dressing and diuretic.

4. In the Extracts from Nature Book (B47) we read that the hibiscus family includes over 200 species, mainly with medicinal uses. Richly emollient, hibiscus also calms the skin and relieves itchiness. It also sweetens the breath, eases stomach problems, soothes the nerves and acts as an aphrodisiac.

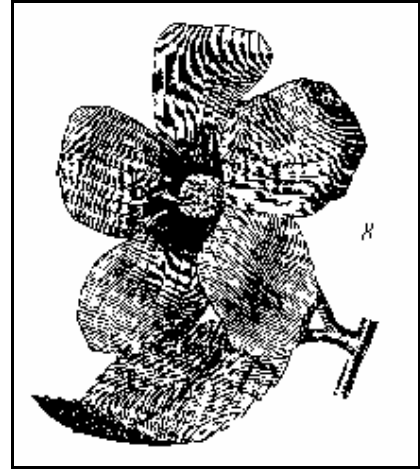
5. Leung (B49) refers to *Abelmoschus moschatus* or Musk seed or muskmallow. This plant is indigenous to India; widely cultivated in tropical countries including the West Indies, Java, Indonesia and Africa. The part used is the seed. Compounds isolated include ambrettolide [(Z)-7-hexadecen-16-olide], ambrettolic acid and farnesol. Recently (Z)-5-tetradecen-14-oleide, (Z)-5-dodecenylyl acetate and (Z)-5-tetradecenylyl acetate have been isolated.

Other compounds include methionine sulphoxide and phospholipids (alpha-cephalin, phosphatidylserine, phosphatidylserine plasmalogen, phosphatidylcholine plasmalogen) Sizable amounts of palmitic and stearic acids may also occur in the ambrette seed oil or the concrete, depending on the method of manufacture.

Based on the available data, ambrette seed oil and its major odour principle, ambrettolide are non toxic.



Used in sophisticated perfumes, in folk medicine it is used as a stimulant and an antispasmodic; in Chinese medicine to treat headache. Later in his book he refers to *Hibiscus sabdariffa* or Jamaica sorrel or Guinea sorrel. A full description of the constituents are given in the text. It is reported to have antispasmodic activity on intestinal and uterine muscles as well as antihelminthic (tapeworm) properties. Its decoction or infusion reportedly has hypotensive properties with no side effects. It is also reported to have bacteriostatic properties.



Hibiscus moscheutos

Used as a flavouring. The leaves are used in Egypt for treating heart and nerve disease. It is used as a refrigerant, and has also been used in cancer. Approved for use in alcoholic beverages.

6. Weiss (B46) reports on *Hibiscus sabdariffa* or Jamaica sorrel or Guinea sorrel, the main constituent is hibiscus acid. The tea is very refreshing but has no medicinal properties.

7. Winter-Griffith (B24) reports that *Hibiscus sabdariffa* or Jamaica sorrel or Guinea sorrel, Roselle is generally regarded as safe when taken in appropriate quantities for short periods of time.

8. Grieve (B6) mentions *Abelmoschus moschatus* or Musk seed or muskmallow, where she says that an emulsion made from the seeds is regarded as antispasmodic. In Egypt the seeds are chewed as a stomachic, nervine, and to sweeten the breath and are also used as an aphrodisiac and insecticide. The seeds made into an emulsion with milk are used for itch. *Hibiscus esculentus*, oca, bendee or gumbo is largely grown in Constantinople as a demulcent, the leaves furnish an emollient poultice.

9. In a reference from Folicon (through CPL Fragrances) we learn that it is a part of Ayurvedic medicine. It contains albuminoids, soluble carbohydrates, tannins, colouring substances. Dermatologically it offers complete skin and mucous membrane compatibility.

Hibiscus rosa-sinensis known in Sanskrit as Japa or Rudhrapushpa. The roots, flowers and seeds are used. The flowers are refrigerant, emollient, demulcent and aphrodisiac; also emmenagogue.

Petals are demulcent. Leaves are emollient, anodyne and aperient or laxative. Hibiscus is useful in menorrhagia, strangury, cystitis and other conditions of the genito-urinary tract; it is also a refrigerant drink in fevers and a demulcent in cough.

Hibiscus is useful as anti-dandruff, anti-infective; prophylactic against skin diseases and allergic conditions, checks hair loss, stimulates hair growth and darkens the hair. Useful for hair care.

10. Schauenberg and Paris (B60) report on *Hibiscus sabdariffa* or Sudanese Tea, Jamaica Sorrel, or Roselle. It contains a red, water-soluble pigment, a mixture of organic acids (malic, citric, tartaric), and hibiscus acid. It is an acid tonic, well tolerated by patients with fever. It is also used to give medicine an acidic flavour. A refreshing tisane which is mildly laxative. It is also used for

flavour and colour in commercially sold sachets of powdered rosehip teas. It was introduced into Europe at the end of the last century as a refreshing drink, Sudanese Tea was regarded as offensive because of its blood red colour. However, it is now used to provide a refreshing flavour in various herb tea mixtures.

11. In the Lawrence review of natural products (Oct 1990) we read that *Hibiscus sabdariffa* is also known as Hibiscus, karkade, red tea, red sorrel, Jamaica sorrel, rosella. It is native to tropical Africa and has elegant red flowers.

Its flowers have long been used for their fragrance. Fibre from the plant has been used as a Jute substitute and used to make rope. The red calyx is used in the preparation of teas, drinks, jams and jellies, and the leaves have been eaten as spinach. The plant is widely used in Egypt for the treatment of cardiac and nerve disease. It has been described as a diuretic. Used in the treatment of cancers. The leaves used as a topical emollient in Africa.

The plant contains various anthocyanins about 1.5% (responsible for the colour of the flowers) and other pigments.

Oxalic, malic, citric and tartaric acids have been identified. These, along with 15% to 28% of hibiscic acid (the lactone of hydroxycitric acid) most likely contribute to the tartness of the herb and its teas. The flowers contain β -sitosterol, traces of an alkaloid and sitosterol- β -D-glucoside.

The plant has been used as a mild laxative, an effect that may in part be due to the acids described above. However, the pharmacologic evaluation suggests that it is not an effective laxative. There is no evidence that hibiscus from teas has a sedative effect.

Aqueous extracts of the plant appear to exert a slight antibacterial effect, but it is not clinically relevant.

Hibiscus flowers are generally regarded to be relatively non-toxic. However, a 30% aqueous extract of the plant had an LD/50 of 0.4 to 0.6ml in mice following intraperitoneal injection. Animals injected with this dose were dull and apathetic and died within 24 hours.

12. Potter (B5) refers to *Hibiscus abelmoschus* or *Abelmoschus moschatus* as Muskseed. It is a native of India but growing also in other tropical countries. The taste is oily and musky; the odour musky when rubbed. The seeds are used.

It is aromatic, insecticide. It is known as an insecticide, being dusted over woollens to protect them from moths etc. For medicinal purposes, the seeds are made into a paste with milk and employed as a remedy for itch.

13. Lust (B8) says that Ambrette comes from Abelmosk (*Hibiscus moschatus*).

14. In a botanical information sheet from A. Webster of English Grains we read of *Hibiscus sabdariffa*, Hibiscus or red sorrel. The origin for habitat is Angola; nowadays world-wide especially North Africa, Far East, Mexico. The dried calyces and outer calyces picked when the fruit is ripe are used.

Contains: vegetable acids (lemon, apple, wine and hibiscus acids), anthocyanes, flavone

derivatives, mucous polysaccharides. Used as aromatic and colouring agent.

Red Sorrel is used in the first place as a refreshing drink without caffeine. If taken in larger quantities, red sorrel has a mild laxative effect because it contains fruit acids which are poorly absorbable. According to the Commission E (Board of Public Health, Berlin) there is no evidence of a therapeutic effect from red sorrel flowers.

According to African traditional medicine, red sorrel flowers have a great variety of actions, e.g. spasmolytic, antibacterila, diuretic and anthelmintic. They have also been applied in ointments and compresses. Hibiscus is used as a colouring agent in rosehip tea.

15. In a data sheet from Dr.Marcus.

Hibiscus (*Hibiscus sabdariffa*) is a shrub commonly found in tropical countries with characteristic scarlet blossoms. Main growing areas are the Sudan, Egypt, Thailand and China.

Hibiscus Blossom, also known as Roselle or Jamaican Sorrel, is frequently found as an ingredient of tea blends, and is used to make a refreshing beverage, mallow tea.

Ingredients:

1. Plant acids (hibiscus acid, citric acid, malic acid and tartaric acid) give hibiscus tea its characteristic fruity and acid flavour.

2. Anthocyanidins (delphinidin, cyanidin) give the hibiscus infusion its wine red colour.

16. Manning (B141) says that it is an erect annual up to 6' or more. Leaves large, on long stalks, divided into 3-5 pointed lobes with toothed margins. Flowers bright yellow with red centre, solitary in leaf-axils on short stalks. Habitat: moist but well drained soils. Pollinated by insects.

The fruit is a long ridged capsule. Mucilaginous and containiing numerous seeds. Fresh fruit are rich in vitamin A and also contain vitamins B1 and C, calcium, phosphorous, iron and a little protein. Seeds are like small peas. Cultivated widely in the tropics. Young fruit eaten as a vegetable or in soups and meat dishes. Young seeds cooked like peas. Seeds dried as coffee substitute. Fruit sometimes pickled or dried fro winter use. Leaves cooked as pot herb. Stem fibres used locally but not commercially.

Several varieites in cultivation, differing in form of fruit, degree of hardness, flavour.

17. SIDDHA MEDICINAL HERBS AS COSMETICS INGREDIENTS

An article for SPC, March 1994.

BY: Dr. Alan Onions

Cosmetics & Detergents Group Manager, Honeywell & Stein Limited

It is probably appropriate therefore to begin with hair care. According to traditional texts the flowers and leaves of *Samparatha* (Tamil) or *japakusuma*, (Sanskrit) or *Hibiscus rosa-sinensis* are boiled in water to produce an infusion which is then mixed with a herbal oil to be applied to the hair as a stimulant for the growth of luxurious tresses. Hibiscus flower juice is now included in an a herbal oil and conditioner sold throughout Eastern India under the name *Jaba Kusam*.

This formulation is reputed to be particularly effective against dandruff. Interestingly, the use of hibiscus for hair care is also widespread throughout China, Polynesia and South East Asia.

18. The Lawrence Review of Natural Products May 1994. Ambrette or *Abelmoschus moschatus* Medic.

Common names: Ambrette, musk okra, muskmallow.

Botany: This plant is cultivated for its seeds, which have a characteristic musk-like odour. The seeds are the source of ambrette, an aromatic oil used in perfumery. The plant grows to about 3 feet with showy yellow flowers with crimson centres. The plant is indigenous to India and is cultivated throughout the tropics. It is a member of the family Malvaceae.

History: Several parts of the plant have been used throughout history, most notably the seed oil, which is valued for its fragrant smell. The oil is used in cosmetics and has been used to flavour alcoholic beverages, especially bitters and coffee. The tender leaves and shoots are eaten as vegetables and the plant is often grown as an ornamental.

Philippine natives have used decoctions of the plant to treat stomach cancer, and extracts of the plant have been used to treat such diverse ailments as hysteria, gonorrhoea and respiratory disorders.

Chemistry: Distillation of the plant yields farnesol and furfural. The volatile oil is high in fatty acids, including palmitic and myristic acids. The ketone ambrettolide (a lactone of ambrettolic acid) is responsible for the characteristic musk-like odour. A variety of other related compounds have also been identified in quantities of less than 1% of the oil.

The bark yield a fibre that is used to produce tough cloths.

Pharmacology: Little is known about the pharmacologic activity of this plant. The related species *A. manihot* has been shown to limit the development of renal injury in rabbits with immune complex-induced glomerulonephritis, and *A. ficulneus* may contain substances that inhibit the development of the foetal sheep brain and that may impair the health of the ewe.

Toxicology: Although the seeds were once considered to be stimulants with antispasmodic activity, the plant has been classified as an "Herb of unidentified Safety" by the FDA. However, the extracts are classified as GRAS (Generally Recognised As Safe) for use in baked goods, candies and alcoholic beverages. Ambrettolide is reported to be non-toxic.

Ambrette and related "nitro musks" are highly lipophilic and have been shown to persist in human mother's milk presumably following absorption through the skin from dermally-applied cosmetics.

Musk ambrette and musk ketone, both found in cosmetics and aftershaves, have been shown to cause photosensitivity and dermatitis in sensitive individuals.

19. From the internet. HAU

In the old days this plant was so highly valued that permission to cut it was required of the

village chief. Today it is often called "hau bush" and is termed an invasive plant, as it has taken over some areas where acres are covered high with hau, at the same time creating windbreaks and stabilizing the soil.

Seeds and cuttings of hau were brought by early Polynesian voyagers to Hawai`i Nei, and planted by the settlers to yield a light-weight tough white wood with a brown heart. Hau is found and used throughout tropical and subtropical Polynesia, Melanesia and Micronesia and is held in high regard for its usefulness to the traditional life of oceanic people.

Hibiscus tiliaceus is the scientific name of hau. The naturally curved branches of this plant's softwood are used to make canoe outriggers. The three parts are the niako, the two booms, and the float, ama. To get the proper shapes, the younger branches were sometimes trained into arches or shaped in an imu, underground oven. The bark was stripped from the branches which were then soaked for a few weeks in ocean water. This treatment would discourage insects and rot. Wiliwili or `ohi`a lehua were also used for the ama. These two woods are buoyant and lightweight as is hau, but they are stronger and better suited for larger canoes.

Traditionally, hau branches were piled near the shoreline to indicate fishing was kapu, because spawning was occurring in that area.

Cork-like hau wood pieces were used as floats on fishnets. The soft wood was also helpful in making fires. A pointed piece of hau was rubbed in a groove of a harder wood, such as kukui. The dust particles of hau that rubbed apart would smolder as the rubbing increased. Then small pieces of coconut fiber or bits of tapa bark cloth were ignited from the hau, and the fire was next put to grasses, sticks and finally to wood.

Adze handles were most often made of hau, as were light-weight practice spears, massage sticks, brooms, and the cross-beams for kites.

Hau cordage, called `ili hau, provided tying material used daily. The cordage is made by cutting off stems and younger smooth branches, making a slit lengthwise and removing the bark with the hands. The bark strips are then soaked. When the outer bark is slipped off, remaining are cream-colored smooth fibers for braiding and twisting into cordage. For some uses the outer bark isn't removed, eventually falling off with use.

Hau cordage provided ropes for hauling and many other needs: slings; canoe lashing; strings for bows; net bags; carrying handles for water-gourds; fasteners for lauhala baskets; shark nooses; strands for lei making; strainers for coconut cream and `awa drinks; sewing material to piece together tapa cloth for clothing and bedding; a form of tapa itself; hula skirts of hau bark; sandals; and cord for snapping dyes into line designs onto tapa cloth.

Hau grows well near the ocean, streams, and in moist sloping areas up to the 2000 foot elevation. This shrub spreads to form a creeping jungle of interwoven, curved and twisted springy arching branches. Sometimes trunks up to 12 feet long recline to form roots where they touch the ground. These become impenetrable places.

The leaves are heart-shaped and round, from 2 to 12 inches in diameter. They are leathery, with a smooth surface, while the underside is velvety and consists of matted white hairs. Sometimes the leaf edges are scalloped, but usually not.

Hau is a true hibiscus, with five crepe-like petals with a central column. The 2-3 inch long bright yellow cup-shaped flowers have reddish centers, and form at the ends of the branches. As the day goes by, the flower changes color to orange and then to reddish-brown, before it falls off the plant by the next morning. The inch long dry downy brown fruiting capsule contains 5 valves, each with 3 smooth seeds.

In home gardens, hau is propagated from cuttings, and the trunks can be trained to create a garden shelter or arbor called a hau lanai. This plant is also grown as a natural fence barrier.

A slimy juicy sap found in the dome of the flowerbud and in the bark was used as a mild laxative. For babies and young children, the flowerbuds were used; and, for adults and older children, the small white dome-shaped bump inside the bottom of the flower petals was used. The buds were also chewed and eaten for dry-throat. Slime from soaking the bark of the stems was medicine for congested chests. The lubricant quality of the inner bark was of value as an enema or could assist in the passage of a baby at childbirth.

One Hawai`i legend says that hau is a sister of the goddess Hina, changed into a tree. The people of Tahiti say hau is the grandchild of heaven and earth. Some people equate the brief span of the hau flower as representative of the transitory nature of human life.

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Abstract

In mouse, the benzene extract of Hibiscus rosa-sinensis flowers was administered at four different dose levels (250-1000 mg/kg body weight/day) from day 1-4 postcoitus. Anti-implantation response and associated changes in the uterine chemical composition were studied. With an increase in the dosage of the extract, the percentage of implantation failure increased. At the dose level of 1 gm/kg body weight, the extract led to failure of implantation in 93% of the mice. The effect was accompanied by adversely altered uterine weight, its protein content and alkaline and acid phosphatase activity. In another experiment, influence of the extract on uterine uptake of progesterone was studied in bilaterally ovariectomized mice treated with or without estrogen. It exerted neither inhibitory nor stimulatory influence on uterine progesterone uptake in untreated castrated mice but the estrogen-induced increase in the uptake level was significantly inhibited by the extract. Failure of uterine bed preparation due to antiestrogenic potentiality of the extract has been discussed as the plausible cause of implantation failure.

Trade Names and Manufacturers upjohn [USA], nen [USA]

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Abstract

In mouse, oral administration of the benzene extract of *Hibiscus rosa-sinensis* flowers at a dose level of 1 gm/kg body weight/day from day 5-8 of gestation led to termination of pregnancy in about 92% of the animals. The effect was associated with a significant fall in peripheral level of progesterone and increase in uterine acid phosphatase activity, as measured on day 10. The ovary exhibited signs of luteolysis, and the corpus luteal Delta5-3beta-hydroxysteroid dehydrogenase activity decreased markedly. The interceptive effect of the extract was prevented completely by exogenous progesterone (1 mg/mouse/day) or chorionic gonadotropin (1 I.U./mouse/day) and partially (62.5%) by exogenous prolactin (500 ug/mouse/day). In unilaterally pregnant mouse having trauma-induced deciduomata in the sterile horn, the extract caused resorption of the fetuses, and regression of the deciduomata accompanied by reduction in weight of the ovaries. Luteolysis, may be due to interference with the luteotropic influence, and a consequent fall in plasma level of progesterone have been suggested as the plausible cause of termination of pregnancy.

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Abstract

Benzene extractives of *Hibiscus rosa-sinensis* flowers, administered during day 1-4 of gestation, exerted anti-implantation effect without affecting the tubal transport of zygote. On day 4, normal number of blastocyst was present in the uterus but they did not implant. However, as studied by pontamine blue reaction, it was evident that hyper-permeability of the endometrial capillaries which is the earliest known response of a receptive endometrium to any kind of decidualogenic stimulus was inhibited by the extract. The magnitude of decidualization, as assessed by weight of the traumatized uterine horn and supported by the histological pictures of the uteri was significantly lower in comparison to that of the controls. Ovarian structure exhibited signs of luteolysis. Inadequate progesterational development of the endometrium due to interference with the conditioning of the uterus with progesterone during prenidatory phase of pregnancy has been suggested as the plausible cause of the extract-induced implantation failure.

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Abstract

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Abstract

The effect of 50% ethanol and benzene extracts of *Hibiscus rosa sinensis* flowers was studied on the concentration of Na⁺ and K⁺ in the serum and uterine flushings of ovariectomized, mated and cyclic rats. In ovariectomized rats, both extracts given alone did not alter the K⁺ content of the uterine flushings but when administered with estradiol dipropionate (EDP), a partial antagonism was observed when compared to EDP given alone. Conjoint treatment of extracts with EDP plus progesterone did not induce any significant change. In mated rats, both extracts did not alter the concentration of Na⁺ on the day of implantation but decreased significantly the concentration of K⁺ in uterine fluid. In cyclic rats, the administration of the extracts for 6 and 12 days did not cause any significant change in the concentration of K⁺ of uterine flushings both their administration for 18 days caused a significant decrease. In all three experiments, the concentration of Na⁺ in uterine flushings and of Na⁺ and K⁺ of serum did not show any significant changes.

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Abstract

A survey programme was organised in Lucknow and Farrukhabad, two towns of Uttar Pradesh, from March 1987 to July 1987. During the survey, the common folk medicine plants used by women were recorded and Ayurvedic and Unani drug encyclopedias were consulted for the antireproductive potential of these plants. Aqueous or 90% ethanol extracts of the plants of interest were studied in rats orally dosed for 10 days after insemination with special reference to effects on foetal development. Leaf extracts of *Moringa oleifera* and *Adhatoda vasica* were 100% abortive at doses equivalent to 175 mg/kg of starting dry material. Only the flowers of *Acacia arabica* and *Hibiscus rosa-sinensis* appeared to lack teratologic potential at the doses tested.

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Abstract

A representative mucilage, called Hibiscus-mucilage RL, was isolated from the leaves of *Hibiscus rosa-sinensis* L. It was homogeneous on electrophoresis, and its molecular mass was estimated to be roughly 1.0×10^7 . Its intrinsic viscosity value in aqueous solution was 23.2. The major constituent is an acidic polysaccharide composed of L-rhamnose: D-galactose: D-galacturonic acid: D-glucuronic acid in the molar ratio of 5:8:3:2. Methylation analysis, partial hydrolysis and nuclear magnetic resonance studies indicated its main structural features including a unique backbone chain composed of α -1,4-linked D-galactosyl α -1,2-linked L-rhamnosyl α -1,4-linked D-galacturonic acid units. The mucilage showed considerable anti-complementary activity.

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Abstract

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35. Kholkute SD. Mudgal V. Udupa KN.: Studies on the antifertility potentiality of *Hibiscus rosa sinensis*. Parts of medicinal value; selection of species and seasonal variations. *Planta Medica*. 31(1):35-9, 1977 Feb.

36. Kholkute SD. Chatterjee S. Udupa KN.: Effect of *Hibiscus rosa sinensis* Linn. on oestrous cycle & reproductive organs in rats. *Indian Journal of Experimental Biology*. 14(6):703-4, 1976 Nov.

37. Kholkute SD. Udupa KN.: Antiestrogenic activity of Hibiscus rosa-sinensis Linn. flowers. Indian Journal of Experimental Biology. 14(2):175-6, 1976 Mar.

38. Kholkute SD. Udupa KN.: Effects of Hibiscus rosa sinensis on pregnancy of rats. Planta Medica. 29(4):321-9, 1976 Jun.

39. Verma VS.: Mosaic disease of Chinese shoe flower (Hibiscus rosa-sinensis L.). Zentralblatt Fur Bakteriologie, Parasitenkunde, Infektionskrankheiten Und Hygiene - Zweite Naturwissenschaftliche Abt: Allgemeine, Landwirtschaftliche Und Technische Mikrobiologie. 131(2):122-4, 1976.

40. Pal AK. Bhattacharya K. Kabir SN. Pakrashi A.: Flowers of Hibiscus rosa-sinensis, a potential source of contraceptives agent: II. Possible mode of action with reference to anti-implantation effect of the benzene extract. Contraception. 32(5):517-29, 1985 Nov.

Abstract

Benzene extractives of Hibiscus rosa-sinensis flowers, administered during day 1-4 of gestation, exerted anti-implantation effect without affecting the tubal transport of zygote. On day 4, normal number of blastocyst was present in the uterus but they did not implant. However, as studied by pontamine blue reaction, it was evident that hyper-permeability of the endometrial capillaries which is the earliest known response of a receptive endometrium to any kind of decidualogenic stimulus was inhibited by the extract. The magnitude of decidualization, as assessed by weight of the traumatized uterine horn and supported by the histological pictures of the uteri was significantly lower in comparison to that of the controls. Ovarian structure exhibited signs of luteolysis. Inadequate progesterone development of the endometrium due to interference with the conditioning of the uterus with progesterone during pre-implantation phase of pregnancy has been suggested as the plausible cause of the extract-induced implantation failure. Registry Numbers 0 (Plant Extracts). 71-43-2 (Benzene).

41. Tan CH.: Is Hibiscus rosa sinensis Linn. a potential source of antifertility agents for males?. International Journal of Fertility. 28(4):247-8, 1983.

Abstract

The effects of oral administration of aqueous and alcoholic extracts of flowers of H. r. sinensis (250 mg/kg BW/day, 30 days) on the reproductive organs of male rats have been examined. The results indicate that the organ weights were unaffected by the extracts: weights of the testis, epididymis, ventral prostate, and seminal vesicle of the treated animals were not significantly different from those of the controls. The testis and epididymis of the rats also showed normal histological features, irrespective of treatment. No apparent toxicity of the extracts was discernible. Registry Numbers 0 (Plant Extracts).

42. Kabir SN. Bhattacharya K. Pal AK. Pakrashi A.: Flowers of Hibiscus rosa-sinensis, a potential source of contraceptives agent: I. effect of benzene extract on implantation of mouse. Contraception. 29(4):385-97, 1984 Apr.

Abstract

In mouse, the benzene extract of *Hibiscus rosa-sinensis* flowers was administered at four different dose levels (250-1000 mg/kg body weight/day) from day 1-4 postcoitus. Anti-implantation response and associated changes in the uterine chemical composition were studied. With an increase in the dosage of the extract, the percentage of implantation failure increased. At the dose level of 1 gm/kg body weight, the extract led to failure of implantation in 93% of the mice. The effect was accompanied by adversely altered uterine weight, its protein content and alkaline and acid phosphatase activity. In another experiment, influence of the extract on uterine uptake of progesterone was studied in bilaterally ovariectomized mice treated with or without estrogen. It exerted neither inhibitory nor stimulatory influence on uterine progesterone uptake in untreated castrated mice but the estrogen-induced increase in the uptake level was significantly inhibited by the extract. Failure of uterine bed preparation due to antiestrogenic potentiality of the extract has been discussed as the plausible cause of implantation failure. Registry Numbers EC 3-1-3-1 (Alkaline Phosphatase). EC 3-1-3-2 (Acid Phosphatase). 0 (Estrogen Antagonists). 0 (Plant Extracts). 57-83-0 (Progesterone).

43. Prakash AO. Mathur A. Mehta H. Mathur R.: Concentrations of Na⁺ and K⁺ in serum and uterine flushings of ovariectomized, pregnant and cyclic rats when treated with extracts of *Hibiscus rosa sinensis* flowers. *Journal of Ethnopharmacology*. 28(3):337-47, 1990 Mar.

Abstract

The effect of 50% ethanol and benzene extracts of *Hibiscus rosa sinensis* flowers was studied on the concentration of Na⁺ and K⁺ in the serum and uterine flushings of ovariectomized, mated and cyclic rats. In ovariectomized rats, both extracts given alone did not alter the K⁺ content of the uterine flushings but when administered with estradiol dipropionate (EDP), a partial antagonism was observed when compared to EDP given alone. Conjoint treatment of extracts with EDP plus progesterone did not induce any significant change. In mated rats, both extracts did not alter the concentration of Na⁺ on the day of implantation but decreased significantly the concentration of K⁺ in uterine fluid. In cyclic rats, the administration of the extracts for 6 and 12 days did not cause any significant change in the concentration of K⁺ of uterine flushings but their administration for 18 days caused a significant decrease. In all three experiments, the concentration of Na⁺ in uterine flushings and of Na⁺ and K⁺ of serum did not show any significant changes. Registry Numbers 0 (Plant Extracts). 113-38-2 (estradiol dipropionate). 50-28-2 (Estradiol). 57-83-0 (Progesterone). 7440-09-7 (Potassium). 7440-23-5 (Sodium).

44. Mathur R.: Histochemical localization of alkaline phosphatase in the uterus of rats: response to a few indigenous plant extracts. *Acta Europaea Fertilitatis*. 17(4):297-300, 1986 Jul-Aug.

Abstract

Localization of alkaline phosphatase in the uterine luminal and glandular epithelium of rats under the influence of 50% ethanolic and benzene extracts of three indigenous plants viz. *Embelia ribes* Burm. (dried berries), *Artobotrys odoratissimus* Linn. (fresh green leaves) and *Hibiscus rosa sinensis* Linn. (flowers) has been studied histochemically. 75 and 150 mg/kg doses of 50% ethanolic extracts of *E. ribes* increased the intensity of reaction for alkaline phosphatase in both luminal and glandular epithelium, whereas extracts of *A. odoratissimus* and *H. rosa-sinensis* could not elicit any significant positive staining in luminal and glandular epithelium for alkaline phosphatase. Intense positive reaction for alkaline phosphatase due to *E. ribes* extract has been

correlated with its estrogenic mode of action. Registry Numbers EC 3-1-3-1 (Alkaline Phosphatase). 0 (Plant Extracts).

45. Pakrashi A. Bhattacharya K. Kabir SN. Pal AK.: Flowers of *Hibiscus rosa-sinensis*, a potential source of contragestative agent. III: Interceptive effect of benzene extract in mouse. *Contraception*. 34(5):523-36, 1986 Nov.

Abstract

In mouse, oral administration of the benzene extract of *Hibiscus rosa-sinensis* flowers at a dose level of 1 gm/kg body weight/day from day 5-8 of gestation led to termination of pregnancy in about 92% of the animals. The effect was associated with a significant fall in peripheral level of progesterone and increase in uterine acid phosphatase activity, as measured on day 10. The ovary exhibited signs of luteolysis, and the corpus luteal delta 5-3 beta -hydroxysteroid dehydrogenase activity decreased markedly. The interceptive effect of the extract was prevented completely by exogenous progesterone (1 mg/mouse/day) or chorionic gonadotropin (1 I.U./mouse/day) and partially (62.5%) by exogenous prolactin (500 micrograms/mouse/day). In unilaterally pregnant mouse having trauma-induced deciduomata in the sterile horn, the extract caused resorption of the fetuses, and regression of the deciduomata accompanied by reduction in weight of the ovaries. Luteolysis, may be due to interference with the luteotropic influence, and a consequent fall in plasma level of progesterone have been suggested as the plausible cause of termination of pregnancy. Registry numbers 0 (Abortifacient Agents, Non-Steroidal). 0 (Plant Extracts). 57-83-0 (Progesterone). 71-43-2 (Benzene).

46. Shimizu N. Tomoda M. Suzuki I. Takada K.: Institution: Kyoritsu College of Pharmacy, Tokyo, Japan. Plant mucilages. XLIII. A representative mucilage with biological activity from the leaves of *Hibiscus rosa-sinensis*. *Biological & Pharmaceutical Bulletin*. 16(8):735-9, 1993 Aug.

Abstract

A representative mucilage, called Hibiscus-mucilage RL, was isolated from the leaves of *Hibiscus rosa-sinensis* L. It was homogeneous on electrophoresis, and its molecular mass was estimated to be roughly 1.0×10^7 . Its intrinsic viscosity value in aqueous solution was 23.2. The major constituent is an acidic polysaccharide composed of L-rhamnose: D-galactose: D-galacturonic acid: D-glucuronic acid in the molar ratio of 5:8:3:2. Methylation analysis, partial hydrolysis and nuclear magnetic resonance studies indicated its main structural features including a unique backbone chain composed of alpha-1,4-linked D-galactosyl alpha-1,2-linked L-rhamnosyl alpha-1,4-linked D-galacturonic acid units. The mucilage showed considerable anti-complementary activity. Registry Numbers EC 3-1-3-1 (Alkaline Phosphatase). 0 (Complement Inactivators). 0 (Oligosaccharides). 0 (Plant Extracts).

47. Nath D. Sethi N. Singh RK. Jain AK.: Commonly used Indian abortifacient plants with special reference to their teratologic effects in rats. *Journal of Ethnopharmacology*. 36(2):147-54, 1992 Apr.

Abstract

A survey programme was organised in Lucknow and Farrukhabad, two towns of Uttar Pradesh,

from March 1987 to July 1987. During the survey, the common folk medicine plants used by women were recorded and Ayurvedic and Unani drug encyclopedias were consulted for the antireproductive potential of these plants. Aqueous or 90% ethanol extracts of the plants of interest were studied in rats orally dosed for 10 days after insemination with special reference to effects on foetal development. Leaf extracts of *Moringa oleifera* and *Adhatoda vasica* were 100% abortive at doses equivalent to 175 mg/kg of starting dry material. Only the flowers of *Acacia arabica* and *Hibiscus rosa-sinensis* appeared to lack teratologic potential at the doses tested. Registry Numbers 0 (AbortifacientAgents). 0 (Plant Extracts). 64-17-5 (Alcohol, Ethyl).

48. Singh MP. Singh RH. Udupa KN.: Anti-fertility activity of a benzene extract of *Hibiscus rosa-sinensis* flowers on female albino rats. *Planta Medica*. 44(3):171-4, 1982 Mar.

49. Singwi MS. Lall SB.: Cytostatic & cytotoxic effects of flower extract of *Hibiscus rosa sinensis* on spermatogenically & androgenically active testes of a non-scrotal bat *Rhinopoma kinneari* Wroughton. *Indian Journal of Experimental Biology*. 18(12):1405-7, 1980 Dec.

50. Potter (B285) refers to Muskseed as *Abelmoschus moschatus* Medic. (Family: Malvaceae), which has the synonyms; Ambrette Seed, Muskmallow, *Hibiscus abelmoschus* L. The taste is oily; odour, musky. The seed are used.

Constituents: (i) Oil, containing ambrettolide, ambrettolic acid, (Z)-5-tetradecen-14-olide, (Z)-5-tetradecenyl acetate and (Z)-5-dodecenylacetate and farnesol (ii) Phospholipids such as *alpha*-cephalin, phosphatidylserine and others.

Medicinal uses: Stimulant, aromatic, antispasmodic, insecticide. Used more often as a perfume and cosmetic ingredient.

51. Zakaria (B273) refers to *Hibiscus rosa-sinensis* Linn. (Malvaceae) by the local names *mati laki*, *Mati bini*, *Laki pukul bini*, *Baru landak*, *Bunga waktu besar*, *Botan*, *Bunga Raya*.

Part used: Flower buds

Traditional use: The white-coloured flower buds are eaten to treat hypertension

Scientific study: Studies have shown that the glycoside constituents in the plant exhibit hypotensive effects (lower the blood pressure) in dogs at dosages 40-80 mg/kg. Blood pressure was low for 1-2 hours. Compounds that have been isolated are quercetin-3-diglucoside, quercetin-3,7-diglucoside, cyanidin-3,5-diglucoside and cyanidin-3-sophoroside-5-glucoside.