

ROSE HIPS

Rosa canina L.

Family

Rosaceae (the rose family).

This family of flowering plants includes many edible fruits (such as apples, pears, quinces, apricots, plums, cherries, peaches, raspberries and strawberries), almonds and ornamental trees and shrubs (such as roses, meadowsweets and hawthorns).

Parts Used

Fruit.

Description

Rose hips are the pseudofruits of the dog rose or wild briar rose, a scrambling rose species native

to Europe, northwest Africa and western Asia, and naturalised in Australia, New Zealand and North America. They are called 'pseudofruits', or what botanists term a false fruit, because it is really the stalk end that forms the hip and grows up around the central carpels, enclosing them in a case; the real fruits, each containing one seed, are the little hairy objects within it. Immediately after the flower has been fertilised the receptacle around the immature fruits grows gradually luscious, and red, and forms the familiar hip which acts as a bait for birds who distribute the seeds. This woody creeper, which can grow up to five metres, has curved thorns on the stem, leaves with about three pairs of toothed leaflets, attractive pink or white sweet scented flowers and the fleshy, red rose hip fruits.^{1,2,3}



Traditional Use

The botanical name is derived from the common name dog rose. The Roman naturalist Pliny attributed the name dog rose to a belief that the plant's root could cure the bite of a mad dog. It is not clear if the dogs were rabid. Another theory is that it was the dag rose, dag being a dagger because of its great thorns, and like the dogwood (originally dagwood) became changed to dog by people who did not understand the allusion. The use of the dog rose in prescriptions dates back to Hippocrates (c. 460 – c. 370 BC) but precisely what for is unclear. As a medicinal plant it came into full bloom in World War II. When Britain was unable to import fresh citrus fruits the government organised the gathering of dog rose fruits, or hips, which were known to be a rich source of vitamin C. Processed into syrup the rose hips helped to prevent scurvy and still, today, the plant is valued as a rich source of vitamin C.⁴

Rose hips have been used traditionally to treat a range of conditions including diarrhoea, bladder infections and diabetes. In Europe and America, rose hips are processed widely into jam and juice, used as a vitamin C supplement, in cosmetics and as a folklore drug in the form of tisane.⁵

English herbalist Nicholas Culpeper (1600s) said that the 'fruit of the wild briar, which are called hips, being thoroughly ripe, and made into a conserve with sugar, besides the pleasantness of taste, doth gently bind the belly...and helps digestion...being made into a powder and drank, to break the stone, to provoke urine when it is stopped, and to ease and help the colic'.⁶

In the classic book *A Modern Herbal* (1931), the first comprehensive encyclopaedia of herbs to appear since the days of Culpeper, the author Maude Grieve says the scarlet fruit or hip (named after the Anglo-Saxon word for hip, *hiope*) was esteemed for dessert in former times when garden fruit was scarce. Grieve says "another old writer says: Children with great delight eat the berries thereof when they are ripe and make chains and other pretty geegaws of the fruit; cooks and gentlewomen make tart and suchlike dishes for pleasure". She says the 'confection of hips' is astringent and considered strengthening to the stomach and useful in diarrhoea and dysentery,

allaying thirst, and for its pectoral qualities good for coughs and spitting of blood.⁷

Professor Rudolph Weiss, highly regarded as the founding father of modern German phytotherapy, says rose hips are also known as *Fructus Cynosbati* (*kyon*=dog, *batos*=briar) by pharmacists. He says rose hip tea for colds and influenza is made by infusing 2 to 5g of *Fructus Cynosbati* for 15 to 30 minutes in a cup of hot water, a cup to be taken several times daily. This tea also has mildly diuretic properties. Larger amounts of it are taken several times daily to flush out the urinary tract where required. Weiss regards cold rosehip tea as a good thirst quencher in fever.⁸

Constituents

The vitamin C content of fresh rose hips is higher than that found in citrus fruits. Rose hips contain fruit acids (ascorbic acid, malic acid and citric acid), are also high in folate and contain vitamins A, B3, D and E along with flavonoids (such as tiliroside and glycosides of quercetin and kaempferol), hydroxycinnamic acids and ellagitannins (with gallotannins being the main components), carotenoids (lycopene), betasitosterol, fructose, phenolic acids, proanthocyanidins, fatty acids, pectines, magnesium, zinc, copper and numerous other phytochemicals including recently characterised galactolipids. These nutrients can be depleted or destroyed during processing and the content of phytochemicals has been shown to be sensitive to the maturity of the fruits as well as drying time, drying air temperature and moisture content. An interesting characteristic of rose hips is that its chemical composition differs depending on the cultivar, growing region, climate, maturity, cultivation practice and storage conditions. Significant variations in organic acids, phenolics, sugars, water-soluble vitamins and minerals of rose hips have been reported over the years by various researchers.^{9,10,11,12}

Actions

Anti-inflammatory, antioxidant, astringent, mild diuretic, nutrient.

Pharmacological Activity

Anti-inflammatory Activity

Rose hips have been found to have anti-inflammatory and antinociceptive (analgesic) activities in several *in vivo* experimental models with synergistic interactions between compounds. The anti-inflammatory power of rose hips is reported to be similar to that of indomethacin (a non-steroidal anti-inflammatory drug (NSAID) commonly used as a prescription medication to reduce fever, pain, stiffness, and swelling),¹³ although its mode of action is different. The lipophilic constituents have been found to be particularly active with respect to anti-inflammatory properties including actions on arachidonic acid metabolism and inhibition of both cyclooxygenase-1 and 2. Much of the anti-inflammatory action of rosehips has been attributed to high quantities of galactolipids, a class of compounds recently shown to possess antitumour promoting and anti-inflammatory activity, both *in vitro* and *in vivo*. Rose hips and its constituent galactolipids, have also been found to inhibit the production of inflammatory mediators and confer chondroprotective effects *in vitro*. In contrast to NSAIDs and aspirin, rosehip has anti-inflammatory actions that do not have ulcerogenic effects and do not inhibit platelets or influence the coagulation cascade or fibrinolysis (a normal body process that prevents blood clots), thereby avoiding potential side effects for patients who may be at increased risk from the gastrointestinal or cardiovascular side effects of NSAIDs.¹⁴

In a 2010 double-blind placebo-controlled trial patients with rheumatoid arthritis (RA) were randomised to treatment with capsulated rose hip powder (5g daily) or matching placebo for six months to investigate if standardised powder made from rose hip can reduce the symptom score in patients with rheumatoid arthritis. In a total of 89 patients (90% female, mean age 56.6 + 11.3 years, mean disease duration 12.8 + 9.6 years) Health Assessment Questionnaire (HAQ) in the rose hip group improved whereas in the placebo group it worsened. In the HAQ Patient Pain Scale no significant differences were observed between both groups. In the HAQ Patient Global Scale a trend was seen favouring rose-hip. The results indicate that patients with RA may benefit from additional treatment with rose hip powder.¹⁵

The results of a recent clinical trial indicate that Hyben Vital, a herbal remedy made from a subspecies of rose hips, reduces the symptoms of osteoarthritis. The researchers interpreted the marked differences in the responses of the two groups as indicating a strong “carryover” effect of Hyben Vital. The treatment of osteoarthritis involves the alleviation of symptoms such as pain and stiffness, and the reduction of inflammation. The double-blind, placebo-controlled, crossover study examined the effect of Hyben Vital, recently reported to have anti-inflammatory properties, on the symptoms of osteoarthritis. One hundred and twelve patients with osteoarthritis were randomly allocated to treatment with either Hyben Vital five grams daily or an identical placebo for three months, followed immediately by the alternative treatment. The patients assessed changes in joint pain and stiffness after each treatment period on a five-point categorical scale. General wellbeing, including mood, sleep quality and energy were also assessed and recorded in a personal diary. The results in the two arms of the crossover differed markedly. Group A (placebo first) showed significantly more improvement from Hyben Vital than from placebo, $p < .0078$ for pain and $p < .0025$ for stiffness. But Group B (Hyben Vital first) revealed a positive effect of the same order as for Hyben Vital in group A, not only from the active drug, but also from placebo (difference not significant). An identical pattern was observed when general wellbeing from the diary records was evaluated. When patients, on the basis of reduction in joint pain, were divided into responders and non-responders, the first three months of active treatment (group A) showed a response rate of 31/47 (66%) compared to that of placebo (group B) 18/50 (36%), $p < .0185$. No major side effects occurred in either group.¹⁶

In 2008 a comprehensive review of the literature was conducted to summarise the pharmacological and clinical effects of rose hip to re-evaluate its usefulness in traditional medicine. This was a result of rose hip being negatively monographed by the German Commission E due to insufficient evidence of effects and effectiveness. For various preparations of rose hip, and rose hip and seed, antioxidative and anti-inflammatory effects have been demonstrated. Lipophilic constituents are involved in those mechanisms of action. The proprietary rose hip and seed powder Litozin

has been employed successfully in a number of exploratory studies in patients suffering from osteoarthritis, rheumatoid arthritis and low back pain. However, the sizes of the clinical effects for the different indications need to be determined to assure clinical significance. There is also a rationale behind the use of Litozin as part of a hypocaloric diet based on the rose hip probiotic, stool regulating and smooth muscle-relaxing actions, as well as the rose hip seed lipid-lowering, antiobese and antiulcerogenic effects. Further research is needed to clarify the importance of the reported promising experimental effects in clinical use and to characterise the optimum rose hip seed oil preparation for topical use in the treatment of skin diseases.¹⁷

A particular galactolipid – GOPO® – has been shown to be the active principle responsible for the observed *in vitro* inhibition of chemotaxis and chemiluminescence of human peripheral blood leucocytes without any toxicity to the cells. This suggests GOPO® is important for the clinically observed anti-inflammatory properties of standardised rosehip powder, which include reduced serum C-reactive protein (CRP) and creatinine levels in patients with osteoarthritis and healthy subjects as well as improved pain and joint movement in osteoarthritis patients (see below for earlier studies).¹⁸

An earlier study found the anti-inflammatory properties of rose hips are useful as a natural treatment in patients with osteoarthritis although at the time the researchers said it remains to be proven which of the components are responsible for these effects. There is some evidence that in addition to the high vitamin content flavonoids may be actively involved. Laboratory experiments have shown that rose-hip extract inhibits lipid oxidation *in vitro* and reduces the chemotaxis and chemoluminescence of leucocytes. In clinical studies serum C-reactive protein and creatinine level declined in healthy subjects and patients with osteoarthritis under rose hip treatment. Additionally patients suffering from osteoarthritis reported that physical symptoms declined. Data from a randomised controlled trial indicates not only that pain significantly declined but also flexion of the hip improved in the active treatment group.¹⁹

A study investigating the leucocyte-related anti-inflammatory properties of rose hips demonstrated that rose hips possesses anti-inflammatory properties and might be used as a replacement or supplement for conventional drug therapies in some inflammatory diseases such as arthritis. The effect of rose hip on a number of inflammatory parameters was evaluated using the following models: The effect of rose hip extract on chemotaxis and chemiluminescence of peripheral blood polymorphonuclear leucocytes (PMNs) from healthy subjects *in vitro*; the effect of rose hip administered to healthy subjects on serum levels of creatinine and C-reactive protein and on chemotaxis and chemiluminescence of peripheral blood PMNs. Rose hip extract at concentrations higher than 500micro/m1 inhibited the chemotaxis and chemiluminescence of peripheral blood polymorphonuclear leucocytes *in vitro*. Daily intake of rose hip powder at doses of 45g or lower by healthy subjects resulted in reduced chemotaxis of peripheral blood PMNs and reduced the level of serum creatinine and acute phase protein CRP.²⁰

The aqueous and ethanol extracts of rose hips and the fractions prepared from the latter were investigated for their anti-inflammatory and antinociceptive activities in several *in vivo* experimental models. The ethanolic extract was shown to possess significant inhibitory activity against inflammatory models and on a pain model. Further attempts to isolate and define the active constituent(s) were inconclusive, possibly due to the synergistic interaction of components in the extract.²¹

The findings of a 2013 Iranian study showed that rose hips extract possesses protective effects against kidney function disturbances, oxidative stress and histological damages. The researchers concluded that the oral consumption of rose hips extract for seven days can protect kidneys against disturbances due to ischemia (restriction in blood supply to the tissues) for 30 minutes and reperfusion (restoring blood flow) for 24 hours in rats. They commented that noticing the known anti-inflammatory and antioxidant properties of rose hips extract it is likely that it induces its effects through these properties or other unknown pathways which require to be examined by further studies. This

study aimed to investigate the effects of rose hips extracts on histological damages, oxidative stress and functional disturbances induced by bilateral renal ischemia and reperfusion.²²

Antioxidant Activity

Rose hips are rich in polyphenolic compounds such as proanthocyanidins and flavonoids such as quercetin and catechin. The high phenolic and flavonoid content of rose hips has been observed to correlate with antioxidant activity and when rose hips extract containing these phenolics is deprived of vitamin C it still shows considerable antioxidant activity. This activity includes protective effects against oxidative stress, enhanced activity of antioxidant enzymes such as superoxide dismutase and catalase, and protective effects on gap junction intercellular communication.²³

In a recent study the antioxidant activities of rose hip infusions were evaluated according to four *in vitro* tests systems; the lipid oxidation assay, protein oxidation test, DNA damage test and carbohydrate damage assay. The actual dose of rose hips being consumed is often variable, unpredictable or simply unknown. Therefore, in this study, five different (1%, 2%, 3%, 4%, 8%) concentrations of rose hips infusions were used to determine the optimum antioxidant dose of rose hips by using the different *in vitro* test systems. The results suggest that rose hips have the potential to be used as an antioxidant substance at 3% concentration.²⁴

Antidiabetic, Lipid Lowering and Antiobesogenic Activity

The results of a 2015 double-blind, randomised, placebo-controlled study suggests that rose hip extract may be a good candidate food material for preventing obesity. Obesity has become a great problem all over the world. The researchers repeatedly screened to find an effective food to treat obesity and discovered that rose hip extract shows potent antiobesity effects. Investigations in mice have demonstrated that rose hip extract inhibits body weight gain and decreases visceral fat. This study examined the effect of rosehip extract on human body fat in pre-obese subjects. The 12 week, single-centre study was conducted on 32 subjects who had a body mass index of ≥ 25 but < 30 . The subjects were assigned to two random groups and

they received one tablet of placebo or rosehip that contained 100mg of rosehip extract once each day for 12 weeks with no dietary intervention. Abdominal fat area and body fat percent were measured as primary outcomes. The other outcomes were body weight and body mass index. Abdominal total fat area, abdominal visceral fat area, body weight, and body mass index decreased significantly in the rosehip group at week 12 compared with their baseline levels ($p < .01$) after receiving the rosehip tablet intake, and the decreases in these parameters were significantly higher when compared with those in the placebo group. Additionally, body fat percent tended to decrease compared with the placebo group and their baseline level. Moreover, the abdominal subcutaneous fat area was significantly lower in the rosehip group than in the placebo group at week 12 after the initiation of intake ($p < .05$). In addition, there were no abnormalities, subjective symptoms, and findings that may indicate clinical problems during the study period.²⁵

Rose hips have been used as a traditional treatment for diabetes and have recently been found to possess hypoglycaemic effects in diabetic rats. Similarly, rose hips extract has been reported to significantly reduce blood glucose levels after glucose loading, as well as substantially inhibiting weight gain and/or accumulation of visceral fat without affecting food intake in mice. Rose hips have also been found to produce modest lowering of total cholesterol in humans. While these activities are promising, they await further confirmation in large human clinical trials.²⁶

A 2012 Swedish study has found that daily consumption of 40g of rose hip powder for six weeks can significantly reduce cardiovascular risk in obese people through lowering of systolic blood pressure and plasma cholesterol levels. In studies performed in mice, rose hip powder has been shown to both prevent and reverse high-fat diet-induced obesity and glucose intolerance as well as reduce plasma levels of cholesterol. The aim of this study was to investigate whether daily intake of rose hip powder over six weeks exerts beneficial metabolic effects in obese individuals. A total of 31 obese individuals with normal or impaired glucose tolerance were enrolled in a randomised, double-blind, cross-over study in which metabolic effects of daily intake of a rose hip powder drink

over six weeks was compared with a control drink. Body weight, glucose tolerance, blood pressure, blood lipids and markers of inflammation were assessed in the subjects. In comparison with the control drink, six weeks of daily consumption of the rose hip drink resulted in a significant reduction of systolic blood pressure, total plasma cholesterol, low-density lipoprotein (LDL) cholesterol and LDL/HDL ratio. The mechanism whereby rose hip is capable of reducing plasma cholesterol is unknown. It is possible that the high fibre content of rose hips impairs the enterohepatic circulation of bile acids by preventing their re-absorption, thereby promoting increased synthesis of bile acids from cholesterol, that is, a mechanism of action similar to that of the cholesterol-lowering drug cholestyramin.²⁷

Tiliroside, a major rose hip seed constituent, has fat metabolism acceleration and glucose clearance improvement effects. The 80% aqueous acetone extracts from the fruit (50mg/kg/d) and seeds (12.5 and 25mg/kg/d) of rose hips were found to show substantial inhibitory effect on the gain of body weight and/or weight of visceral fat without affecting food intake in mice for two weeks after administration of the extracts.²⁸

Indications

- Gastritis, Diarrhoea
- Mild infections especially of the respiratory system and the common cold
- Adjuvant for the pain and joint stiffness associated with osteoarthritis and rheumatoid arthritis
- As a dietary supplement

Energetics

Cooling.

Use in Pregnancy

No data available. Safe if used in amounts normally found in food and nutritional supplements. Rose hip tea has been traditionally recommended during pregnancy and there are no reports of ill effects.²⁹

Contraindications

None known.

Drug Interactions

Caution with anticoagulant/antiplatelet drugs and lithium.

Administration and Dosage

Liquid Extract:	1:1
Alcohol:	60%
Weekly Dosage: ³⁰	20 to 210mL

Mild gastrointestinal disturbances may occur at high dose levels (eg. 45g per day).³¹

Recipe

Rose Hip Syrup

Serve over ice cream and puddings. Use in moderation.

4 cups crushed, dried rose hips
4 tablespoons sugar
1 tablespoon honey

Boil 5 cups of water, add rose hips, and remove from heat. Steep 20 minutes and strain, reserving the fluid. Boil the strained pulp again in 2 cups of water. Remove from stove; steep 10 minutes more. Strain and combine with the first liquid. Boil until reduced to half its volume; add sugar and boil for 5 more minutes. Remove from stove. Add honey as syrup cools. Store in glass containers and refrigerate. Good for three months.³²

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