

ROSAEX™

ROSA ROXBURGHII - A SUPERIOR ANTIOXIDANT

Rosa Roxburghii, or Sweet Chestnut Rose, is a non-domesticated fruit crop endemic to southwestern China known for its white/pink flowers and nutrient rich fruit (3). The fruit itself is aromatic, similar to ripe pineapples, and covered in small spines (6). It remains a greenish color even when ripe. This plant has been labeled one of the promising fruit crops in China because of its high vitamin C content, although it is difficult to eat directly due to many seeds covered in tiny hairs that can irritate the digestive track and mouth when ingested (3, 6).

This fruit contains 46 times more vitamin C than your average orange, earning its nickname the “King of vitamin C” (1). It is additionally rich in a variety of vitamins and minerals including vitamins A and E, flavonoids (10-16 times that of most citrus fruits), tannins, and fatty acids which are rarely found in fruits (6). Extract from this fruit is called “tratt”, and the use of this *Rosa roxburghii* tratt has shown beneficial in several areas of health, helping to reap the benefits of the fruit without the risk of seed irritation.

The most common uses of this plant include antioxidant and immunity support, atherosclerosis, skincare, and endurance. Some studies have even claimed radioprotective capabilities. The high vitamin C content helps to boost the immune system, promote wound healing, and increase iron absorption (9).



Antioxidant Prowess

Many of the positive health effects of *Rosa roxburghii* tratt can be linked to its high level of antioxidants. The total antioxidant capacity of this fruit is 1154 mM TE (which is the unit of measurement for displaying the total antioxidant value) (12). Considering most fruit juices fall between the 3 to 30 mM TE range, it is clear that *Rosa roxburghii* is far superior when it comes to pure antioxidant availability (12). Some studies suggest this is due to large amounts of polyphenols (micronutrients that give the plant its color and help protect it from various dangers) and ascorbic acid which has also been proven to hold antioxidant values (9, 12, 14).

Antioxidants act synergistically and it has been suggested that combinations of antioxidants may be more effective than larger quantities of a single antioxidant (8). Since *Rosa roxburghii* contains multiple forms of antioxidants, it has shown higher antioxidant capacity as the previous numbers indicated. Studies have also concluded that this fruit extract not only increases total antioxidant capacity, it also significantly protects against induced oxidative stress as found through an *in-vivo* study (12). Overall, the available research seems to agree that *Rosa roxburghii* tratt is an effective and superior antioxidant and protector of oxidative stress.

Skincare Possibilities

This high level of antioxidants also aids in the skincare potential of this plant by helping to protect against internal and external stressors that lead to skin discoloration. This is accomplished by reducing the production of melanin triggered by these stressors that leads to undesirable “spots” and possibly hyperpigmentation. It is now recognized that these kinds of skin issues (sagging, wrinkles, and dark spots) primarily caused by oxy-radical damage (11). Vitamin C, which is extraordinarily high in *Rosa roxburghii* tratt, can accelerate wound healing, protect fatty tissues from oxidation damage, and plays an important role in collagen synthesis (9). The simple presence of this vitamin is extremely beneficial to the skin, and this fruit extract happens to be a very bountiful source.

Additionally, topical treatment of this extract has shown evidence of reduced sun damage and photoaging. This includes sun induced erythema (sunburns), wrinkles and spots, and improved skin tone and skin hydration according to one study (10). This suggests that *Rosa roxburghii* extract lowers excessive inflammatory response UV radiation by suppressing pro-inflammatory cytokines in NHEKs (Normal Human Epidermal Keratinocytes) (10). Therefore, *Rosa roxburghii* extract could be used as an anti-inflammatory agent for preventing inflammation and photoageing as well as a brightening agent for balancing melanin production due to sun damage (9, 10, 11).

Atherosclerosis

Atherosclerosis refers to the buildup of plaque and fatty deposits in the arteries, leading to a “hardening of the arteries” and a narrowing passageway for blood flow (12). This is dangerous because it limits the amount of oxygen and nutrient rich blood delivered to vital organs in the body. Also, if this plaque bursts, it can cause clotting and lead to much more serious complications.

Studies have shown that the use of *Rosa roxburghii* tratt leads to increased superoxide dismutase (SOD) activity in red blood cells of patients with coronary artery disease (14). SOD is the main natural enzymatic defence against free radicals and common oxidants (5). This allows for the possibility that increased SOD could help to prevent the oxidation of LDL cholesterol in the arteries (5, 14). This combined with *Rosa roxburghii*'s naturally high antioxidant levels have shown in some studies to slow LDL oxidation and holds potential for preventing atherosclerosis (14). Further research has shown administration of this tratt significantly decreased aortic atherosclerosis injury and inhibited the formation of atherosclerotic lesions in arteries and aorta of tested subjects (14).

Rosa roxburghii has also been said to aid in detoxification and restoration of the liver, colon, kidney, lungs and skin, support healthy cardiovascular function and reduce the risk of heart attacks and stroke through these similar pathways and antioxidant status (9).

Radiation

One of the more interesting and unexpected findings related to *Rosa roxburghii* tratt would be the claims of radioprotective status. Radioprotectors are used to protect normal tissues from ionizing radiation (13). This could be radiation from dangerous work zones (nuclear power, military exposed to ionising radiation, space travelers) or when radiation is used to target specific cells within the body without wanting to damage the surrounding tissues (13).

Although this may not sound like a large part of the population, ionising radiation (in the form of radon) is the second leading cause of lung cancer in the United States (7). Thankfully it is easy to obtain radon tests, and most people living in areas at higher risk are aware of this problem, but radioprotective agents could be of help as a precaution. Due to this, many researchers have been putting in efforts to find natural radioprotective sources (13).

In search of a natural solution, some have isolated active ingredients from natural anti-radiation substances, such as polysaccharides, flavonoids, polyphenols, saponins, alkaloids, and peptides compounds. *Rosa roxburghii* tratt flavonoids, as a well known antioxidant, were looked to for this purpose (13).

One study found that pretreatment with these flavonoids had a positive anti-radiation effect when used prior to exposure, but not when used after exposure (13).

The protective nature could be seen in the increased number of radiation induced spleen colonies and hematological constituents in the peripheral blood in the test group. This study concluded that *Rosa roxburghii* tratt flavonoids are effective radioprotective agents (13).

Endurance/ Activity

If all that is not enough, *Rosa roxburghii* has also shown to benefit athletes. When exercising, the muscle uses glycogen for energy. Once that glycogen is depleted energy, or endurance levels, also decline. *Rosa roxburghii* has been found to improve muscle glycogen recovery, leading to improved endurance while exercising (1, 4).

Additionally it has been said to decrease post- workout oxidative inflammation leading to a faster recovery post workout (1, 2, 4). This goes back to its impressive antioxidant properties protecting muscles from excessive free radical formation. Inflammation from this oxidative stress leads to soreness and further fatigue and damage (2, 4). With *Rosa roxburghii* helping to combat this inflammation while improving muscle glycogen recovery leads to a promising exercise support ingredient.

The Next Step

With an abundance of nutraceutical options available, you need to be clear on what you're looking to achieve in your product innovation roadmap.

Consumers seeking products with abundant, naturally-derived vitamin C and flavonoids and antioxidant power are likely to appreciate the demonstrated effectiveness of *Rosa roxburghii*.

All together it can be seen that the overall antioxidant power of this plant is responsible for much of its health-promoting power. From skincare to reduced muscle inflammation, to the overall health of the circulatory system, powerful antioxidants such as this would be wise to consider in an upcoming formulation.



References

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