

**Fact Sheet
on
Rooibos Tea**

Introduction

Rooibos meaning 'red bush' with the scientific name of *Aspalathus linearis* is a broom-like member of the legume family of plants growing in South Africa's fynbos.

[Picture Credit: Rooibos Tea Plantation]



The generic name of the Rooibos tea plant comes from the plant *Calicotome villosa*, *aspalathos* in Greek. This plant has very similar growth and flowers to the Rooibos plant. The specific name *linearis* comes from the plant's linear growing structure and needle-like leaves. The leaves are used to make a tea called Rooibos, bush tea (esp. Southern Africa), or simply rooibos. The product has been popular in Southern Africa for generations and is now consumed in many countries. It is sometimes spelled *rooibosch* in accordance with the old Dutch etymology. (Wikipedia).

[Picture Credit: Rooibos Tea Plant]

While it is steadily gaining popularity, delicious and nutritious Rooibos tea is still relatively unknown to many tea drinkers worldwide. Because Rooibos tea is healthy and contains very little tannin and no caffeine, it is making a real name for itself and should have a long future in the global tea market. (Life is Beautiful).

Varieties of Rooibos Tea

Rooibos is not technically a proper tea, because it is not derived from the *Camellia sinensis* plant. Rooibos, however, is not usually referred to as a tisane (herbal infusion). The Rooibos leaf comes from the plant, a member of the legume family of plants. The Rooibos bush is a small and shrubby bush, with thin needle-like leaves. The bush only grows

between ½ to 1 meter tall. On the bush, the leaves are green, but once processed they turn a deep red from the oxidization of the Rooibos leaves.

Rooibos is available in the market in several forms. Typically, one will get the red leaved Rooibos either in its plain, unflavoured form, or in a flavoured or blended form. Rooibos is now becoming more widely available in its 'green' form as well – as Green Rooibos. Even more recently sees Green Rooibos being flavoured and blended like the typical Red Rooibos. The difference between the two is that the Green Rooibos is the un-oxidized form of the Rooibos bush (Teafrog.wordpress.com).

Which is Better: Red or Green Rooibos Tea?

It is known that Green Rooibos tea has higher levels of antioxidants than traditional Rooibos, but recent studies are proving that both kinds of Rooibos protect against a range of diseases including cancer and that drinking Green Rooibos is not necessarily better.

“People should drink the kind of Rooibos they enjoy most, since we now know that Rooibos with a higher antioxidant content does not always provide the best benefits”, recommends Professor Jeanine Marnewick, manager of the Oxidative Stress Research Centre in the Faculty of Health and Wellness Sciences at Cape Peninsula University of Technology. Professor Marnewick, who has been actively involved in Rooibos research over the last fifteen years, explains that it is not only the level of antioxidants, but also the specific combination of bio-active compounds in rooibos that are important.

“The health benefits from drinking Rooibos tea will also be different for every person – depending on that person’s overall health status”, she adds.
(SA Rooibos Council).

Health Benefits of Rooibos Tea

Evidence of the health benefits of Rooibos Tea is growing by the day. Health benefits, especially the ones associated with drinking of Rooibos tea, are most significant. Rooibos tea contains extremely high levels of antioxidants, powerful substances that fight free radicals in the bloodstream and keep bodies healthy and strong.

Reduction of insomnia, tension headaches and irritability are well known benefits associated with Rooibos tea. As a tea with no caffeine, Rooibos drinkers have found that enjoying a ‘cuppa’ before bed helps to relax them and relieves tension, allowing for a great night of sleep. By helping to normalise tea drinkers’ sleeping habits, Rooibos often reduces headaches and irritability. Although only supported by anecdotal evidence, relief from colic and stomach cramps in babies is a well-known benefit fully accepted by the South African public at large.

Research (not sponsored by CANSA) showed that six cups of Rooibos tea per day increased glutathione by 100%. Rooibos tea, unique to South Africa, is consumed by millions every day and could be playing an important role in preventing cancer.

The most important connection found with cancer was the observation that rats given Rooibos tea as the only source of liquid showed a 500% increase in the master antioxidant, glutathione in the liver. Made within the body, glutathione cannot be taken as a supplement as it is destroyed in the gut. There is ample evidence that glutathione fights cancer by

neutralising carcinogens. For instance, glutathione can bind to the carcinogen aflatoxin, neutralise it so that it cannot bind to DNA and then facilitate the excretion of the glutathione-aflatoxin complex.
(Life is Beautiful).

Rooibos Tea and Cancer

The ability of South African herbal teas (Rooibos and Honeybush extracts) to act as 'chemopreventors' in skin cancer was highlighted by a South African research team (Marnewick, *et al.*) using an animal model. They showed that topical (external) application of tea fractions significantly suppressed tumour growth in mice with skin cancer, when using processed and unprocessed tea.



[Picture Credit: Rooibos Tea]

South African researchers (Van der Merwe, *et al.*) collaborated to compare the potential of different kinds of tea (Rooibos, Honeybush, black oolong and green tea) to suppress mutations, and thereby prevent cancer. Their results confirmed that the phenolic compounds in herbal tea extracts have a strong anti-mutagenic effect (*in vitro* study using cell lines). '*In vitro*' means taking place in a test tube.

Rooibos Tea and Stress

Scientists at Stellenbosch University are shedding new light on the long-held belief that a cup of Rooibos helps us to relax and cope better with the stresses of daily life. A research team at the University's biochemistry department, led by Professor Amanda Swart, has produced scientific evidence that Rooibos tea lowers the production of cortisol by the human body's adrenal glands. Cortisol is the so-called 'stress hormone'. Lowering cortisol levels also lowers the effect of the body's stress response.

They were also able to pinpoint two rare components in Rooibos – the two flavonoids called *aspalathin* and *nothofagin* – that contribute to this stress-lowering effect. *Aspalathin* has not been found in any other plant material, while *nothofagin* has a very limited distribution in nature.

(Stellenbosch University; Hong, Lee & Kim).

Rooibos Tea and Hypertension

Rooibos tea has been shown to alleviate hypertension in some cases. The identities of the compounds in rooibos tea that are attributed to this reduction are unclear. However, a study in the December 2006 edition of *European Journal of Nutrition* presents the blood pressure lowering capabilities of rooibos tea extract. In addition to lowering blood pressure, rooibos tea was shown to reduce the activity of angiotensin converting enzyme in the May 2010 issue of the journal *Public Health Nutrition*. These results suggest that rooibos tea is good for overall cardiovascular health (Hypertension).

Researchers in Pakistan (Khan & Gilani) found that chrysoeriol (a bioactive components of Rooibos, but usually only present at low levels) acted effectively as a bronchodilator, with an

associated effect on lowering blood pressure and relieving spasms. Aorta, trachea and other tissue from rabbits and guinea-pigs were used to illustrate this effect. Chrysoeriol is known for its antioxidant, anti-inflammatory, antitumour, antimicrobial, antiviral and free radical scavenging abilities.

Rooibos Tea and Cardiovascular Disease

A study by Dlodla, *et al.* provided evidence that an aqueous extract of fermented rooibos tea protects cardiomyocytes (the cells that constitute heart muscle), derived from diabetic rats, against experimentally induced oxidative stress and ischaemia (shortage of oxygen).

In a study by Pantsi, *et al.* the cardio-protective properties of aqueous rooibos extracts was clearly demonstrated via the inhibition of apoptosis (cell death) which can be related to the flavonol content of this unique South African herbal tea.

Swedish researchers found that Rooibos tea could help to promote heart health in humans. They found that 30 and 60 minutes after drinking 400 ml of Rooibos, the activity of a specific enzyme (called angiotensin-converting enzyme, or ACE) is significantly inhibited. This enzyme is believed to be involved in the development of cardiovascular disease, and therefore ACE inhibitors are used to treat hypertension and heart disease. The research team could not demonstrate the same effect with green tea and black tea in the group of 17 healthy volunteers who participated in the study. (Persson, *et al.*).

Rooibos Tea and Cancer, Allergy, Aids and Other Infections

The findings of a study by Kunishiro, Tai & Yamamoto, suggested that Rooibos tea extract may facilitate the antigen-specific antibody production through selective augmentation of IL-2 generation both *in vitro* (taking place in a test tube) and *in vivo* (taking place in a living organism). Collectively, Rooibos tea intake may be of value in prophylaxis of the diseases involving a severe defect in Th1 immune response such as cancer, allergy, AIDS, and other infections.

Rooibos Tea and Diabetes Mellitus Type II

A study by Kawano, *et al.* suggested that *aspalathin* in Rooibos tea had beneficial effects on glucose homeostasis (stabilisation) in type 2 diabetes through stimulating glucose uptake in muscle tissues and insulin secretion from pancreatic beta-cells.

A study by Uličná, *et al.* in the Slovak Republic (2006) found that Rooibos provides effective protection against oxidative stress in diabetic rats. These scientists recommend the use of Rooibos for the prevention and therapy of diabetic vascular (blood vessel) complications, especially to protect ocular (eye) membrane systems against peroxidation (a well-defined mechanism of cellular damage in both animals and plants that occurs *in vivo* during aging and in certain disease states).



[Picture Credit: Rooibos Tea Bags]

Rooibos Tea and Human Immune Deficiency Virus (HIV)

In their study Nakano, Nakashima & Itoh (1997) showed that it is probable that acid polysaccharides from rooibos tea were extremely safe, and that HIV infection may be suppressed by daily intake of the alkaline extracts of rooibos tea.

Rooibos Tea and Abdominal Spasm and Diarrhoea



Rooibos tea has been widely used for abdominal spasm and diarrhoea for many years. It possesses a combination of dominant K(ATP) channel activation and weak Ca(++) antagonist mechanisms and hence justifies its use in hyperactive gastrointestinal disorders. (Gilani, *et al.*).

[Picture Credit: Rooibos Tea 2]

Rooibos Tea and Obesity

Rooibos (*Aspalathus linearis*) contains a rich complement of polyphenols, including flavonoids, considered to be largely responsible for its health promoting effects, including combatting obesity. The data from a study by Sanderson, *et al.* showed that hot water soluble solids from fermented rooibos inhibited adipogenesis (formation of fat or fatty tissue) and affect adipocyte metabolism, suggesting its potential in preventing obesity.

Rooibos Tea and Inflammatory Bowel Disease

A Japanese study by Baba, *et al.* (2009) showed that Rooibos could reduce inflammation in rats with colitis (open sores in the colon) via increased antioxidant activity with a consequent reduction in damage to DNA caused by oxidation. These researchers recommend Rooibos as a safe and useful way to reduce oxidative stress.

Rooibos Tea and Immune Function

Research teams in Japan (Ichiyama, *et al.*) demonstrated that the active ingredients in a water-soluble fraction of Rooibos restored immune function in immune-suppressed rats. These results hold significant potential for future research into the immune-boosting properties of Rooibos that could potentially benefit people living with HIV/AIDS.

Rooibos Tea and Ageing

Researchers (Juráni, *et al.*) from the Slovak Republic were able to demonstrate the anti-ageing effect of Rooibos in Japanese quails. The birds were given Rooibos to drink and had ground Rooibos added to their food. The hens on the Rooibos diet laid more eggs and kept on laying eggs as they were getting older, compared to quail hens on a standard diet.

[Picture Credit: Rooibos Tea 3]



Medical Disclaimer

This Fact Sheet is intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation. Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in this Fact Sheet. So far as permissible by law, the Cancer Association of South Africa (CANSA) does not accept any liability to any person (or his/her dependants/estate/heirs) relating to the use of any information contained in this Fact Sheet.

Whilst CANSA has taken every precaution in compiling this Fact Sheet, neither it, nor any contributor(s) to this Fact Sheet can be held responsible for any action (or the lack thereof) taken by any person or organisation wherever they shall be based, as a result, direct or otherwise, of information contained in, or accessed through, this Fact Sheet.

Sources and References

- Baba, H., Ohtsuka, Y., Haruna, H., Lee, T., Nagata, S., Maeda, M. Yamashiro, Y., Shimizu, T.** 2009. Studies of anti-inflammatory effects of Rooibos tea in rats. *Pediatrics International* 51, 700–704.
- Bramati, et al.** 2002. Quantitative characterization of flavonoid compounds in Rooibos tea. *Journal of Agricultural and Food Chemistry*, September 2002.
- Burt, et al.** 1995. Prevalence of hypertension in the US adult population. *Hypertension*, 1995.
- Diudla, P.V., Muller, C.J., Louw, J. Joubert, E., Salie, R., Opoku, A.R. & Johnson, R.** 2013. The cardioprotective effect of an aqueous extract of fermented rooibos (*Aspalathus linearis*) on cultured cardiomyocytes derived from diabetic rats. *Phytochemistry*. Nov. pii: S0944-7113(13)00438-8. doi: 10.1016/j.phymed.2013.10.029.
- Gilani, A.H., Khan, A.U., Ghayur, M.N., Ali, S.F. & Herzig, J.W.** 2006. Antispasmodic effects of Rooibos tea (*Aspalathus linearis*) is mediated predominantly through K⁺-channel activation. *Basic Clin Pharmacol Toxicol*, Nov, 99(5):365-73.
- Hong, I.S., Lee, H.Y. & Kim, H.P.** 2014. Anti-oxidative effects of rooibos tea (*Aspalathus linearis*) on immobilization-induced oxidative stress in rat brain. *PloS One*, Jan. 9(1):e87061.
- Ichiyama, K., Tai, A., Yamamoto, I.** 2007. Augmentation of antigen-specific antibody production and IL-120 generation with a fraction from rooibos (*Aspalathus linearis*) tea. *Bioscience, Biotechnology and Biochemistry* 71, 589–602.
- Juráni, M., Lamošová, D., Máčajová, M., Kostál, L., Joubert, E., Greksák, M.** 2008. Effect of rooibos tea (*Aspalathus linearis*) on Japanese quail growth, egg production and plasma metabolites. *British Poultry Science* 49, 55–64.
- Khan, A., Gilani, A.H.,** 2006. Selective bronchodilatory effect of rooibos tea (*Aspalathus linearis*) and its flavonoid, chrysoeriol. *European Journal of Nutrition* 45, 463–469.
- Kearmey, et al.** 2005. Global burden of hypertension: analysis of worldwide data. *Lancet*, 2005.
- Kawano, A., Nakamura, H., Hata, S., Minakawa, M., Miura, Y. & Yagasaki, K.** 2009. Hypoglycemic effect of aspalathin, a rooibos tea component from *Aspalathus linearis*, in type 2 diabetic model db/db mice. *Phytomedicine*, 16(5):437-43.
- Kunishiro, K., Tai, A & Yamamoto, I.** 2001. Effects of rooibos tea extract on antigen-specific antibody production and cytokine generation in vitro and in vivo. *Biosci Biotechnol Biochem*, Oct, 65(10):2137-45.
- Life is Beautiful.** 2012. A lifestyle booklet published by the Cancer Association of South Africa.
- Marnewick, J.L., Joubert, E., Joseph, S., Swanevelder, S., Swart, P., Gelderblom, W.C.A.** 2005. Inhibition of tumour promotion in mouse skin by extracts of rooibos (*Aspalathus linearis*) and honeybush (*Cyclopia intermedia*), unique South African herbal teas. *Cancer Letters* 224, 193–202.
- Nakano, M., Nakashima, H. & Itoh, Y.** 2011. Anti-human immunodeficiency virus activity of oligosaccharides from rooibos tea (*Aspalathus linearis*) extracts in vitro. *Leukemia*, April 11 suppl 3:128-30.
- Pantsi, W.G., Marnewick, J.L., Esterhuyse, A.J., Rautenbach, F. & van Rooyen, J.** 2011. Rooibos (*Aspalathus linearis*) offers cardiac protection against ischaemia/reperfusion in the isolated perfused rat heart. *Phytomedicine*, 18(14):1220-8.

Persson, I.A., Persson, K., Hägg, S., Andersson, R.G.G. 2010. Effects of green tea, black tea and Rooibos tea on angiotensin-converting enzyme and nitric oxide in healthy volunteers. *Public Health Nutrition* 3(5), 730–737.

Rooibos Tea

Hemera Technologies/PhotoObjects.net/Getty Images

Rooibos Tea 2

https://www.google.co.za/search?q=rooibos+tea&source=lnms&tbm=isch&sa=X&ei=FWoUU4GpMYe mhAfup4Fw&ved=0CAcQ_AUoAQ&biw=1120&bih=661&dpr=0.9#facrc=_&imgdii=_&imgrc=7Lv5FgE A3hbLuM%253A%3BiNW_G4DYDBK6BM%3Bhttp%253A%252F%252Fncancurteman.files.wordpress.com%252F2013%252F06%252Frooibos-tea-pot.png%3Bhttp%253A%252F%252Fncancurteman.wordpress.com%252F2013%252F06%252F02%252Fsouth-african-foods-in-murder-casts-a-spell%252F%3B349%3B247

Rooibos Tea Bags

https://www.google.co.za/search?q=rooibos+tea&source=lnms&tbm=isch&sa=X&ei=cVa2U6HIFqjj4Q SQ_IGgAg&sqi=2&ved=0CAYQ_AUoAQ&biw=1517&bih=714&dpr=0.9#facrc=_&imgdii=_&imgrc=hm osBy9vb_fr9M%253A%3B49JHoweddBDW_M%3Bhttp%253A%252F%252Fwww.liffiton.com%252Fs outhafrica%252Fimages%252Frooibos.jpg%3Bhttp%253A%252F%252Fwww.liffiton.com%252Fsouth africa%252Ffood.php%3B250%3B179

Rooibos Tea Plant

https://www.google.co.za/search?q=green+rooibos+tea&source=lnms&tbm=isch&sa=X&ei=VRYDU8 X9Fcry7Ab1zYCgBw&ved=0CAcQ_AUoAQ&biw=1517&bih=714&dpr=0.9#facrc=_&imgdii=_&imgrc= 8rkUghyqqbFSKM%253A%3BebEn1Jr4i_FObM%3Bhttp%253A%252F%252Fwww.driefonteinrooibos .co.za%252Fdriefontein-fairtrade-rooibos%252Fimages%252Frooibosplant.jpg%3Bhttp%253A%252F%252Fwww.driefonteinrooibos.co .za%252Frooibos.php%3B250%3B444

Rooibos Tea Plantation

https://www.google.co.za/search?q=green+rooibos+tea&source=lnms&tbm=isch&sa=X&ei=VRYDU8 X9Fcry7Ab1zYCgBw&ved=0CAcQ_AUoAQ&biw=1517&bih=714&dpr=0.9#facrc=_&imgdii=nvNz-x8Ak91g1M%3A%3BQ5tH7ijbUw1-oM%3BnvNz-x8Ak91g1M%3A&imgrc=nvNz-x8Ak91g1M%253A%3BG5gGJbyokd8xyM%3Bhttp%253A%252F%252Fwww.globalfusiontrading.co m%252Flibrary%252Fcollage.jpg%3Bhttp%253A%252F%252Fwww.globalfusiontrading.com%252Fro oibostea.htm%3B540%3B259

Sanderson, M., Mazibuko, S.E., Joubert, E., de Beer, D., Johnson, R., Pheiffer, C., Louw, J. & Muller, C.J. 2014. Effects of fermented rooibos (*Aspalathus linearis*) on adipocyte differentiation. *Phytomedicine*, Jan, 21(2):109-17.

SA Rooibos Council

<http://www.health24.com/Diet-and-nutrition/Beverages/Is-green-rooibos-better-than-red-20130210>

Stellenbosch University

<http://dx.doi.org/10.1016/j.jsbmb.2011.11.003>).

Teafrog.wordpress.com

<http://teafrog.wordpress.com/2008/03/21/rooibos-tea-different-types/>

Uličná, O., Vančová, O., Božek, P., Čársky, J., Šebeková, K., Boor, P., Nakano, M., Greksák, M. 2006. Rooibos tea (*Aspalathus linearis*) partially prevents oxidative stress in streptozotocin-induced diabetic rats. *Physiology Research* 55, 157–164.

Van der Merwe, J.D., Joubert, E., Richards, E.S., Manley, M., Snijman, P.W., Marnewick, J.L., Gelderblom, W.C.A. 2006. A comparative study on the antimutagenic properties of aqueous extracts

of *Aspalathus linearis* (rooibos), different *Cyclopia spp.* (honeybush) and *Camellia sinensis* teas. Mutation Research 611, 42–53.

Wikipedia

<http://en.wikipedia.org/wiki/Rooibos>