

Rooibos supports heart energy

To understand the physiological mechanisms of Rooibos better, one needs to look at what is happening within the cardiomyocytes which are the cells that make up the heart muscle, and the mitochondria inside these cells. Mitochondria can be seen as the powerhouse that keep the cell full of energy by acting similar to a digestive system which takes in nutrients, breaks them down, and creates energy-rich molecules for the cell to function. Just for interest's sake, a single mitochondrion is about $\frac{1}{2000}$ of a millimetre in size and is indicated as the purple shapes in the cell model below.

The way how energy is generated to keep the heart cells alive, plays a key role in cardiomyopathies (heart disease) and cardioprotection. The mitochondria in the cardiomyocyte produce energy and chemicals to protect the heart, as a natural defense mechanism. However, during disease such as diabetes or high blood pressure, the mitochondria become abnormally “disturbed” and releases toxic factors. These toxic factors can cause heart cell death because mitochondria become less efficient in producing energy from dietary sources such as glucose and fats.

A number of studies demonstrated a link between Rooibos and changes in



energy substrate utilisation in the liver and skeletal muscle. It seems that rooibos increases and improve liver activity by supporting the pathway of the enzyme which regulates cellular energy. Dr Gerald Maarman explained that Rooibos provides support to the

mitochondrial activity and the production of *adenosine triphosphate* (ATP) in muscle. ATP provides energy to drive many processes in living cells, such as muscle contraction and nerve impulses and subsequently enables the heart's mitochondria to act as powerhouses of the heart cells.

His study hypothesised that Rooibos achieves these cardioprotective effects by cell energy production, improving mitochondrial parameters, reducing pro-apoptosis, increasing anti-apoptosis and restoring heart-cell size back to normal.

Dr Maarman is a fulltime lecturer and researcher at the Division of Medical Physiology at Stellenbosch University. He was also appointed as faculty of the Global Taskforce for Infections in Pulmonary Vascular Disease at the 14th Annual World Congress of the Pulmonary Vascular Research Institute.

National Science and Technology Forum Award

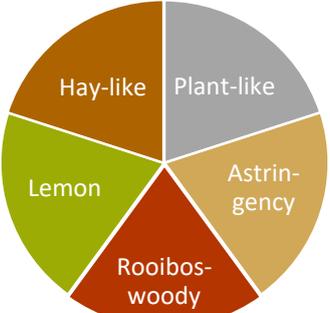
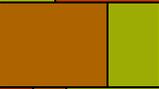
Congratulations to Prof Jeanine Marnewick who has won the 2019/2020 National Science and Technology Forum (NSTF) Award for Communication for Outreach and Creating Awareness of Science, Engineering, Technology (SET) and innovation.

The studies Prof Marnewick have conducted in the past 20 years on Rooibos resulted not only in the first scientific evidence on the cancer prevention properties of the herbal tea, but also in the first clinical evidence of Rooibos' redox status (balance between oxidants and antioxidants) and lipid profile (cholesterol and triglycerides) improvement properties and how this can reduce one's risk of heart disease.



Sensory attributes of RTD rooibos iced teas

Rooibos-based convenience type products produced from fermented rooibos extracts have gained prominence, such as ready-to-drink (RTD) rooibos iced tea, instant rooibos tea and instant rooibos cappuccino.

Sensory attributes of different RTD rooibos iced tea formulation and taste preference			
Sensory attributes	Different RTD rooibos iced tea formulations	Sensory of each RTD	Taste preference
	Fermented rooibos extract and lemon flavour		High
	Aspalathin-enriched green rooibos extract solubilised in nanomicelles and lemon flavour		High
	Aspalathin-enriched green rooibos extract solubilised in nanomicelles, fermented rooibos extract and lemon flavour		Medium
	Aspalathin-enriched green rooibos extract and lemon flavour		Low

Nina Muller, Lizette Joubert and Dalene De Beer of the Department of Food Science at Stellenbosch University and the Post-Harvest & Wine Technology Division at ARC Infruitec-Nietvoorbij conducted a study on the sensory attributes of RTD rooibos iced teas from a consumer viewpoint.

The aim of research was to formulate a rooibos RTD with enhanced aspalathin content, but an acceptable sensory profile as guided by fermented rooibos RTD, the most common commercial product.

The sensory characteristics of

unflavoured and lemon flavoured rooibos RTD iced teas prepared with fermented, aspalathin-enriched green or a mixture of fermented and aspalathin-enriched green rooibos extracts were compared.

Also, a scientific process involving nanomicelles was developed to encapsulate the higher aspalathin content of green rooibos, but without compromising on the preferred taste of fermented rooibos. This microencapsulation of polyphenol extracts reduces the astringency experienced with higher aspalathin content in an iced tea and protects the extract from oxidation,

thereby producing a functional food that is still acceptable to consumers from a taste point of view.

The tasting panel preferred the RTD iced tea with a rooibos-woody and lemon flavour and was not put off by a hay-like flavour, but disliked the plant-like flavour and astringency. The researchers concluded that despite the functional benefits associated with a higher aspalathin content of green rooibos iced tea compared to the traditional fermented rooibos iced tea, the tasting panel preferred the rooibos-woody taste over plant-like and astringent tastes.



Rooibos Espresso: quick & easy

A quick & easy way to make your own Rooibos Espresso mix:

1. Grind/blend loose leaf Rooibos in a blender or coffee grinder and keep in an airtight container
2. Use a French press and add a heaped tablespoon of grinded Rooibos
3. Add boiling water and let it stand for 5 minutes or even longer
4. If you choose to use an espresso machine, the resulting shot will be thick, with a great crema.
5. Drink as is, or add steamed milk and a bit of honey for a red cappuccino

