



## **Introduction Sutherlandia frutescens - Kankerbossie**

Full botanical name: *Sutherlandia frutescens* subspecies *microphylla* elite SU1™ chemotype

Common names: Kankerbossie (Afrikaans) and Cancer Bush (English)

*Sutherlandia* enjoys a long history as a highly valued component of African Traditional Medicine and some of its traditional indigenous names in Southern Africa indicate this:

In Tswana it is called 'Phetola' which means it changes, meaning that the plant changes the course of many illnesses towards a favourable outcome. (This is similar to the European concept of an alterative.)

The North-Sotho name of 'Lerumo-Lamadi' means the spear for the blood indicating that *Sutherlandia* is a powerful blood-purifier and all-purpose tonic.

*Sutherlandia frutescens* is called 'Motlepelu' in Sotho, which means bringing back the heart.

These points to the traditional treatment with *Sutherlandia* for emotional shock and stress.

The ancient Zulu name is 'Insiswa'. This means the one who dispels darkness. This speaks about its anti-depressant effect, and about the fact that it is a great and powerful medicine and healer for a diverse range of health conditions.

*Sutherlandia frutescens* is regarded as the most profound and multi-purpose of the medicinal plants in Southern Africa. Because of its efficacy as a safe treatment for diverse health conditions it has enjoyed a long history of use in Southern Africa.

*Sutherlandia* powerfully assists the body to mobilize its own resources to cope with physical and mental stresses, and it is therefore correctly speaking, an Adaptogenic (in the class of herbs such as *Astragalus*, *Ginseng*, and *Ashwaganda*).

In fact *Sutherlandia* is the African adaptogen par excellence. It is an herb with a profound effect on the body-mind-energy system, maintaining and optimizing physical, mental and emotional wellness, and it is as if Nature has combined in Africa, in a single plant, the immune stimulating benefits of *Echinacea*, the anxiolytic and anti-depressant effects of *Hypericum* and the energy of *Panax Ginseng*.

The indigenous, folk, and contemporary uses of *Sutherlandia* in South-Africa include:

- Enhancing well-being
- Immune support
- Treatment for Cancer (hence it's common English and Afrikaans names)
- Longevity
- Stress, Depression and Anxiety
- Wasting from Cancer and TB
- Quality-of-Life tonic for Cancers and TB
- Appetite Stimulant in Wasted Patients (but not healthy people)
- Influenza
- Chronique Fatigues Syndrome, ME Syndrome and Yuppie Flue
- Viral Hepatitis
- Asthma and Bronchitis
- Type 2 Diabetes



- Mild to Moderate Hypertension
- Rheumatoid Arthritis
- Peptic Ulcer, Gastritis, and Reflux Oesophagitis
- Hot flushes and Irritability in Menopause

### **Chemistry and Pharmacology**

The chemistry of *Sutherlandia* been rigorously studied by Prof. Ben-Erik van Wyk and Dr. Carl Albrecht.

The chemistry is intriguing, and suggests that it is the combined effects of the phyto-chemicals, rather than any single key active that accounts for the efficacy. The five known key compounds are:

- \*L-Canavanine
- \*Pinnitol
- \*GABA
- \*Asparagine
- \*A novel triterpenoid glucoside (currently known only as SU1) which is very close in structure to astragloside from *Astragalus*.

The published biological activities of these compounds validate some of the traditional uses of the plant:

#### **\*L-Canavanine**

This potent non-protein amino acid is an L-Arginine antagonist with published anti-viral, including against the influenza virus and retroviruses (Green, 1988), anti-microbial, anti-fungal and patented anti-cancer (Swaffar, 1995; Crooks, 1994) activities. Prof. van Wyk found an average of 2.2 mg of L-Canavanine per dry gram of leaf material of *Sutherlandia*. L-Canavanine is also a selective inhibitor of inducible nitric oxide synthase, mediating inflammation and smooth muscle contractility and has application in the treatment of septic shock and chronic inflammation (Anfossi, G. et al. 1999; Levy, B. et al. 1999).

#### **\*Pinnitol**

Pinnitol, a known anti-diabetic agent (Narayanan, 1987), has been isolated from *Sutherlandia* leaves, and quantitative work is in progress. A US Patent (Ostlund, 1996) has been taken out for the clinical application of using Pinnitol for treating wasting in cancer and aids patients.

#### **\*GABA (Gamma-aminobutyric acid)**

GABA was isolated from dry *Sutherlandia* leaves at levels of up to 14 mg per gram dry weight. It is an inhibitory neurotransmitter that reduces stress, depression, anxiety, panic attacks and insomnia and its presence could account for the traditional use of the plant for anxiety and stress, and for the improvement in mood and well-being experienced by many patients.



**\*Asparagine**

A non-essential amino acid that has a stress reducing effect on the body. It also aids the effective functioning of the liver and kidneys. It is required by the nervous system to maintain equilibrium and is also required for amino acid transformation from one form to another.

**\*SU1**

A novel triterpenoid glucoside known as SU1 has been isolated and characterized, and is one of the key compounds used in the selection of raw material for propagation. This compound has promising biological activities, and is still the subject of ongoing research.

Triterpenoids closely related to the one isolated from Sutherlandia have well known immunomodulatory activity.

**Summary and Comments:**

Preliminary scientific research, published peer-reviewed scientific research, and clinical experience suggests that the key phyto-chemicals in select chemotypes of Sutherlandia varieties are:

- Immunomodulatory
- Anti-inflammatory
- Vaso-dilatory
- Analgesic
- Anti-viral, anti-fungal and anti-bacterial
- Anti-cancer
- Inhibitors of Tumor Necrosis Factor (TNF) - excess production of TNF known to drive the wasting process in Cancer and TB patients.

**Other Documented Traditional Uses:**

Sutherlandia is generally regarded as the most beneficial of the medicinal plants in Southern Africa, and has thus been used by all cultures in Southern Africa including the San, Khoi Khoi, Sotho and Nguni-speaking people.

**#Emotional**

Sutherlandia has been used as supportive treatment in mental and emotional stress, including irritability, anxiety, hypertension and depression. In olden times widows of slain Zulu warriors used Sutherlandia as a gentle tranquillizer during the mourning period and agitated Zulu warriors returning from battle would be given an infusion of Sutherlandia "to take the war out", i.e. as a calming tea.

**#Respiratory**

Sutherlandia was traditionally used throughout its natural distribution to good effect to combat the symptoms of flu during the 1918 influenza pandemic in Southern Africa, and is still used to treat flu to this day. Sutherlandia is traditionally believed to shorten the duration and severity of the illness and it can also be taken as a convalescent tonic for post-influenza debility. Sutherlandia has traditionally been used in both the prevention and treatment of the symptoms of asthma and to treat bronchitis.



#### #Gastro intestinal

Sutherlandia has been used to treat symptoms of heartburn, reflux oesophagitis, gastritis and peptic ulceration. Traditional African herbalists in South Africa use Sutherlandia for nervous disorders and stomach ulcers. Sutherlandia was historically used to treat diarrhoea and dysentery, and it was used as a supportive remedy for people with unspecified liver conditions. It is slightly purgative at higher doses and has therefore been used as a gentle remedy for constipation.

#### #Urogenital Tract

Sutherlandia was used to treat urinary tract infections, including gonorrhoea, and cystitis, and particularly what would nowadays be termed interstitial cystitis.

#### #Diabetes

Sutherlandia is widely used by rural herbalists and medicine men to treat type 2 diabetes.

#### #Musculo-Skeletal

Sutherlandia has traditionally been used to treat gout, rheumatoid arthritis and osteoarthritis.

#### #Cancer

In Southern Africa, Sutherlandia is still used as a traditional treatment to improve the quality of life in patients with malignant tumours, as a Cancer preventative and as a supportive supplement for wasting from cancer and tuberculosis.

#### **Safety:**

In keeping with World Health Organization guidelines for the assessment of herbal medicines, Sutherlandia is generally regarded as safe on the basis of its long history of safe use in South Africa.

It is one of the few medicinal plants on the world market that has been formally studied for safety, in this case in Vervet monkeys. Elite chemotype Sutherlandia dried leaf powder was tested for safety in 2001 by the Medical Research Council of South Africa. The study was part of a Medical Research Council Indigenous Knowledge Systems (IKS) process to establish a "clinical platform" to assess the safety and efficacy of promising South African indigenous medicinal plants.

No toxicity was apparent in any variable studied by the MRC.

#### **Cultivation:**

In the interests of consistent product quality, and to prevent environmental damage, we use only certified organically cultivated plant material that has been selected from natural strains of plants with a typical and reproducible phytochemical profile.

An elite chemotype (called SU1™) of Sutherlandia frutescens (based specifically on the Microphylla subspecies) has been developed, where specific phytochemical compounds (with particular reference to the triterpenoid glucoside, SU1), and including amino acids, are assayed and quantified and it is the seeds of this chemotype that are re-sown for our Sutherlandia products.



This chemotype has been developed to ensure that batches of Sutherlandia are of reproducible quality, and so that research, such as safety studies, can be reliably applied to the actual product being sold.

Sutherlandia frutescens subspecies microphylla elite (SU1™) chemotype is also the form of Sutherlandia that was used in the Medical Research Council Safety Study. No other forms of Sutherlandia have been formally safety tested.

**Research:**

Key innovators in the research of Sutherlandia and the development of the SU1™ chemotype, who Big Tree Health works closely with, include:

Dr. Nigel Gericke MD

Medical doctor, botanist. Co-author of the books Medicinal Plants of South Africa, Briza, 1997, and People's Plants, Briza, 2000. Internationally regarded authority on the clinical application of South African medicinal plants. Expert advisory panellist United States Pharmacopoeia 1995-2000.

Dr. Carl Albrecht

Ph.D. in Biochemistry and 25 years experience in teaching pharmacology at the Medical School, University of Stellenbosch. Research consultant for the Cancer Association of South Africa and well-known authority on the chemistry, pharmacology and clinical evaluation of South African medicinal plants.

Prof. Ben-Erik van Wyk

Professor of Botany, Rand Afrikaans University. Author of the books Medicinal Plants of South Africa, Briza, 1997, and People's Plants, Briza, 2000. Internationally recognized authority on plant systematics and chemo-taxonomy, authority on indigenous plant use and medicinal plant chemistry.

T.Dr. Bani Isaac Mayeng

Practicing South African traditional doctor, B.Sc in medicinal chemistry from New York State University. Contributor to the Traditional Healers' Primary Health Care Handbook, Kagiso, 1997.