



## **The Significance of Sceletium - PRO**

Sceletium tortuosum has its 4th century of recorded use!

Sceletium tortuosum is a rare succulent from the Mesembryanthemaceae family and is distributed in certain semi-desert areas of Southern Africa. It was (and still is) highly regarded and sought after by both the Khoi and the San (bushmen) people who have used this plant as a mood enhancer since prehistoric times.

The earliest written record of the use of the plant dates back to 1662 when Sceletium was an item of barter during the early settler culture in South Africa by the Dutch and it was considered then the "...greatest clearer of spirits, and the noblest Restorative in the world...".

Sceletium elevates mood and decreases anxiety, stress and tension, and functions as a model anxiolytic, as well as being a very effective anti-depressant. Sceletium is also known to reduce addictive cravings particularly with regard to nicotine and also lessens the withdrawal effects of alcohol. Due to its ability to stimulate feelings of empathy it has also been used with success in couple ( relation) therapy.

In large doses Sceletium can cause euphoria, but without any associated come-down. Long-term use followed by abstinence has not been reported to result in any withdrawal state. The plant is not hallucinogenic, and no severe adverse effects have been documented.

Sceletium is a truly effective plant with which to treat the stress, anxiety and lack of balance often attributed to our busy western lifestyle. Sceletium has a unique ability to bring about emotional balance and, simultaneously cause both relaxation and stimulation of a positive mood. More profoundly it also engenders a sense of connectedness and meaning, making it an ideal supplement for anyone living in the modern world.

The Sceletium-PRO formulation is a product that has been carefully designed to strengthen and support the mental condition to build upon and enhance the primary effects of Sceletium and offer benefits in all areas related to mental and emotional balance and enhancement.

Each Sceletium- PRO formulation vegetarian capsule contains:

- \*Sceletium tortuosum #
- \*L-Tyrosine (free-base)
- \*Trimethylglycine
- \*Nira Brahmi (Bacopa monnieri) 8:1 extract
- \*Folate (from Folic acid)
- \*Vitamin B12 (as Methylcobalamin)

# the question may be asked as to why this product is called Sceletium given the formulation, where 3 of the other co-factors are present in greater volume? The relative potency of the Sceletium tortuosum employed is such that, even though it is in the minority by volume relative to L-Tyrosine, Trimethylglycine and Nira Brahmi, it nonetheless dominates the resulting performance of the formulation.



## Chemistry and Pharmacology

### **\*Sceletium**

The active constituents of the plant are alkaloids, including mesembrine, mesembrenone, mesembrenol and tortuosamine. Mesembrine is the major alkaloid present in Sceletium, and has been determined in, as yet, unpublished laboratory studies, to be a very potent and effective serotonin re-uptake inhibitor.

This receptor-specific activity, as well as receptor activities also found on nicotinic, dopamine and norepinephrine sites validate the traditional mood-elevating uses, and suggest additional therapeutic and wellness potential.

Mesembrine alkaloids also appear to have a harmonizing and balancing effect on other neurotransmitters such dopamine and norepinephrine and epinephrine.

### **\*L-Tyrosine (free-base)**

Tyrosine is the nutrient pre-cursor of dopamine, norepinephrine and epinephrine and is intimately involved with these important mood-affecting brain neuro-transmitters.

Environmental stress is associated with reduced levels of norepinephrine. Tyrosine prevents reduction of norepinephrine levels that are associated with this stress. Many clinical studies, along with a large body of anecdotal evidence, indicate that Tyrosine is a vital substance in alleviating depression, as well as the symptoms of premenstrual syndrome.

L-Tyrosine is also a direct precursor to Thyroxin (Triodo Tyrosine), which is a primary Thyroid hormone. Thyroxin deficiency results in a series of conditions including excess weight gain, cold hands and feet and decreased basal metabolism. L-Tyrosine supplementation works to counteract this.

It has also been found that Tyrosine lowers blood pressure by increasing norepinephrine metabolites.

One of L-Tyrosine's primary metabolic pathways is: L-Tyrosine -> L-Dopa -> Dopamine -> Norepinephrine (nor-adrenalin) -> Epinephrine (adrenalin).

Increased levels of L-Dopa are associated with improved mood and greater capacity for pleasure in the body-mind, while norepinephrine controls our level "mental" energy". It is included for these reasons and also to balance the relaxation effect that is induced by the Sceletium.

### **\*Nira Brahmi (Bacopa monnieri)**

Bacopa monnieri, or Brahmi, is a famous Ayurvedic herbal remedy for mental revitalizing and enhancement. It is effective for all body types. Bacopa is highly recommended in the Asian medical literature and has been prescribed by Oriental physicians as one of the very best mental revitalizing herbs for thousands of years. Contemporary phytochemical research has revealed evidence that Bacopa is an antioxidant. Antioxidants have been linked to improved brain and nervous system function. Another study found that Bacopa use increases the I.Q. scores of students.



Bacopa monnieri is used traditionally for memory, insomnia, epilepsy, insanity and other related conditions, mental acuity, and mental clarity, as a nervine, for learning disabilities, attention span deficiencies, speech impediments, and headache.

In addition, Bacopa contains several glycosides that have demonstrated significant anxiolytic, relaxing and anti-stress effects in pharmacological studies.

Studies revealed that bacosides, which are the major phyto constituents in Bacopa monnieri, help to repair damaged neurons by enhancing proteins involved in the regeneration of neural-cell synapses. [The Bacopa used in our formulation is an 8:1 extract standardized to 16% bacosides.]

Thus Bacopa monnieri can be viewed as nourishment for neural processes that, restores depleted synaptic activity and leads to enhanced memory function, clarity and mental balance.

#### **\*Trimethylglycine**

Trimethylglycine (TMG), which is also called glycine betaine, is a methylation agent (or methyl donor) that lowers homocysteine levels (a contributory factor in heart disease) and, by contributing one of its methyl groups to DNA, potentially reduces DNA aging and errant DNA replication processes.

Methyl donors (like TMG) are directly involved in the formation of numerous brain chemicals, which accounts for their positive cognitive effects.

TMG functions specifically as a biological stable precursor of the very unstable S-adenosyl-methionine (S-AdoMet). S-AdoMet is a critical factor in biochemical reactions and a proven anti-depressant.

S-AdoMet has been used in clinical studies to treat depression, schizophrenia, demyelination diseases, dementia, peripheral neuropathy and other conditions. Several studies have confirmed that S-AdoMet is up to 15% more effective in the treatment of depression than traditional pharmaceutical anti-depressants.

#### **Methyl donors are:**

- Required for the growth of new cells.
- Essential for the manufacture of DNA bases.
- Able to prevent DNA mutations and strand breaks.
- Able to prevent the expression of disease causing genes.
- Able to reduce the risk of genetically induced cancers.
- Able to protect against alcohol induced liver injury.
- Used to neutralize a wide range of toxins.
- Required to support the function of many antioxidants.
- Able to promote the production of serotonin, melatonin and other neurotransmitters.
- Required to detoxify histamine to relieve allergic symptoms.
- Vital in the final steps of protein manufacture.
- Able to help repair and regenerate vital proteins.
- Able to slow and even reverse aging.



**\*Folate (from Folic acid)**

Folate is a B vitamin that plays many critical roles in the body especially with regard to emotional state and mental acuity. It is crucial for DNA and RNA synthesis and is used by the body to produce S-adenosyl methionine (S-AdoMet), which has been established as having a strong effect on mood. S-AdoMet is also essential for over 100 identified essential methylation reactions, such as the methylation of nucleic acids (DNA and RNA), phospholipids (myelin), polysaccharides, and catecholamines, and many other molecules.

The effects of adequate Folic acid supplementation for the treatment of depression, anxiety and other forms of mental / emotional impairment are well documented. Studies have shown that a high proportion of the American population is deficient in folate, and folic acid deficiencies have been linked to depression in clinical studies. Folic acid deficiency also causes serotonin levels in the brain to decrease, which is another cause of depressed mood and impaired mental function.

**\*Vitamin B12 (as Methylcobalamin)**

Although the most commonly used form of Vitamin B12 is cyanocobalamin, vitamin B12 is biologically active in only two forms, Methylcobalamin (which is used in this formulation) and Adenosylcobalamin. While Methylcobalamin is active immediately upon absorption, cyanocobalamin must be converted to either Methylcobalamin or Adenosylcobalamin by the body before use.

Methylcobalamin is the superior form of Vitamin B12 to use, especially in a formulation that is designed to impact on mood. Methylcobalamin is the only form of vitamin B12 found in the brain and it supports a healthy brain, spinal cord and nervous system, which together are necessary foundation optimum mental and emotional health.

Methylcobalamin is essential for the metabolism of nerve tissue and it stimulates the utilization of proteins, fats, and carbohydrates. It is important for the synthesis of DNA and RNA, as well as for production of choline and methionine, a key S-AdoMet component.

Methylcobalamin has been used for many other symptoms including fatigue, nervousness and irritability, insomnia, memory problems, depression, and poor balance.

Adequate methylcobalamin supplementation:

- Regulates sleeping patterns and improves daytime alertness
- Treats physical and mental fatigue (both a cause and effect of depression)
- Ensures optimum cognitive functioning
- Balance's mood
- Stimulates neuronal regeneration in the brain
- Relieves depression, nervousness and irritability



## **Co-factors Formulation Rationale**

### **Nira Brahmi (Bacopa monnieri) 8:1 extract**

Bacopa, in addition to being an anxiolytic (and thus supporting Sceletium's anxiolytic effect), is also a cognitive stimulant, which Sceletium is not. Sceletium is the superior product for balancing one's emotional state and is both anxiolytic and anti-depressive to a significant degree. Bacopa is included for its profound effect on balancing mental processes rather than exclusively emotional ones.

### **L-Tyrosine (free-base)**

L-Tyrosine is included as a key nutritional neurotransmitter precursor. As well as having an excellent stimulating effect on mood by increasing available brain dopamine, it also causes very mild mental and physical stimulation via the "downstream" metabolites of dopamine, being norepinephrine (noradrenalin) and epinephrine (adrenalin). This will counter any tendency towards "drowsiness" which could be induced in some cases by the strong relaxation effect of the Sceletium.

### **Trimethylglycine**

Trimethylglycine is another key nutritional factor that functions specifically as a biological stable precursor of (the very unstable) S-adenosyl-methionine (SAME). SAME is currently a highly regarded natural anti-depressant due to its efficacy. In addition, TMG, as a methyl donor, is involved in countless neurochemical processes and it specifically harmonizes and enhances the production of key neurotransmitters such as serotonin (intimately concerned with mood) and melatonin (which positively affects our waking and sleeping cycles). TMG, in a similar fashion to our other included co-factors, can be seen as promoting a "fertile environment" (in terms of brain chemistry) for supporting the more specific actions of Sceletium, Bacopa and L-Tyrosine.

## **Clinical and Supplement Uses**

Sceletium is being used successfully by a number of psychiatrists, psychologists and doctors with excellent results for anxiety states and mild to moderate depression, and it can also be used by the lay public as a food supplement to elevate mood and for relief from stress and tension. In addition to Sceletium's common use to mitigate the stress and mental fatigue of modern day living, Sceletium has been used as a natural food supplement in treating:

- Low mood, including grey weather syndrome
- Anxiety states, including social phobia
- Irritability in menopause
- Improvement in libido, when lack of libido is from anxiety or low mood
- Post-traumatic stress disorder, as part of a support program
- Bereavement
- Any anxiety and/or tension producing state, such as examinations
- In addition to these better-known clinical uses, there is some preliminary evidence that Sceletium may be of value as a supplement in drug addiction rehabilitation and alcohol rehabilitation support, as part of a formal program. Research is currently underway to evaluate its potential in cognitive enhancement, and the management of Parkinson's disease and Alzheimer's disease.



### Daily use:

The recommended consumption is **2 capsules per day**, together or divided, usually taken later in the day. Under a practitioner's guidance this can be increased to 4 capsules spread throughout the day.

Sceletium may also be used in conjunction with the Shilajit Formulation and/or the Sutherlandia formulation (Health Trilogy), or taken alone.

### Side Effects

Very few people experience side effects. The reported side effects are considered mild and include rare occurrence of:

- Mild headache
- Slight nausea, no vomiting
- Soft stool or loose stool with no cramping
- Transient increase in anxiety or irritability, which resolves itself after an hour or so.

### Contraindications

Although there have been no confirmed reports of drug interactions, because of the neuro-receptor activities of Sceletium there are theoretical interactions with other psychiatric medications and cardiac drugs. People taking any **psychiatric** drug (including all anti-anxiety drugs, sedatives, hypnotics, anti-depressants and anti-psychotics and so-called designer or recreational drugs) or any **cardiac** medications, are advised not to take Sceletium-containing products.

As with most supplements and modern drugs, safety in **pregnancy or while breastfeeding** has not been established. Therefore Sceletium should not be taken without prior consultation with one's physician or health practitioner.

### Raw Materials

Stocks of wild Sceletium plants have dwindled from over-harvesting over centuries. Therefore no wild-harvested plant material should be used in commercial supplements, and manufacturers should always insist on certificates of origin for Sceletium raw material. Sceletium is also a very sensitive plant and has thus far been notoriously difficult to grow on a large commercial scale and so supply has generally lagged behind commercial demand.

Our group has pioneered an association of local growers, and is significantly invested in developing the means to cultivate Sceletium on a sustainable commercial basis to meet the anticipated increasing demand.

Currently, because Sceletium is grown on a small scale by a number of tightly-knit groups in South Africa that include local indigenous communities, limited quantities of top-grade raw material are available, and only seasonally. The Sceletium being tendered is only sourced in this manner and is certified organically cultivated and non wild-harvested.

Brahmi-extract is sourced from one of the top Ayurvedic plant-extracts companies in India.