

Zembrin[®]: An ancient botanical with modern applications for mental wellness



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Zembrin[®]

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BOTANICAL
Sceletium
INGREDIENT

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While modern medicine often focuses on mental illness, it is time for us to focus on improving mental wellness. Poor mood, declining cognition, stress, and anxiety are the areas of high concern. The relation between these areas is tightly connected in the following ways:

- Stress/anxiety decreases cognitive function, learning, and memory.¹
- A person may have trouble with cognitive function, not realizing that it is worry (stress and anxiety) that is impacting their mental performance.
- When we have trouble focusing or concentrating, we often feel stressed or anxious.

As if this was not bad enough, poor mental wellness can impact most aspects of our lives, including cardiovascular health², the immune system³, gastrointestinal problems⁴, hormone issues⁵, weight control⁶, elevated blood sugar⁷ and pain⁸, not to mention our relationships, difficulties at work, home, school, and many other areas.



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Who is impacted? Inside the numbers

In short, we all are impacted by stress and other mental wellness struggles. Just looking at the numbers regarding stress and anxiety, we can see that this is a significant concern. Include the past several years of dealing with the COVID-19 pandemic, and we have opened a Pandora's box for a potential mental wellness meltdown. Before the pandemic, stress and related mental wellness concerns were already on the radar.

Stress and anxiety

Pre-pandemic

- In 2017, 44% of Americans surveyed frequently experienced stress in their daily lives⁹.
- Fifty-four percent of 18- to 29-year-olds frequently experienced stress¹⁰.
- In 2019, about one-third of people globally reported feeling stressed, worried, and/or angry¹¹.
- Forty-nine percent of women frequently experienced stress¹².
- Ten percent of people were affected by anxiety in North America, Western Europe, and Australia/New Zealand¹³.

Current numbers

- Nearly 80% of Americans say the COVID-19 pandemic is a significant source of stress in their lives.¹⁴
- There was a significant increase in mental health problems in the general population in the first year of the pandemic.¹⁵
- Each of the following is reported to have been experienced by about half of working adults globally because of the COVID-19 pandemic¹⁶:
 - o Stress due to changes in work routines and organisation, increased by 55% globally
 - Example: 72% in Peru.
 - o Stress due to family pressures such as childcare, increased by 45% in South Africa, 64% in Saudi Arabia and 18% in the Netherlands.
- Nearly one in five adults say their mental health is worse than last year (2020 vs 2019)¹⁷.
- The World Health Organization claims the COVID-19 pandemic triggered a 25% increase in the prevalence of anxiety and depression worldwide¹⁸.

While stress and anxiety have become the elephant in the room, mood and cognition issues also impact millions of people and are significant mental wellness concerns.

Mood

- The COVID-19 pandemic triggered a 25% increase in mood issues worldwide¹⁹.
- Nearly one in five Americans have a problem with mood disorders²⁰.
- Nine hundred and seventy million represents the number of people globally with any mood type disorder²¹.

Cognition

- Globally the estimated number of people with dementia will increase from 47 million in 2015 to more than 140 million in 2050²².
- Sixteen million Americans are living with cognitive impairment²³.
- One in nine Americans aged 45 and older say they are experiencing declines in thinking ability.
- Among those aged 45 and older who were living alone, 14% said they were suffering from declines in mental function²⁴.



Zembrin® to the rescue

The numbers above are a driving force as to why Zembrin® should be a top consideration for inclusion in mental wellness products. This remarkable South African and ancient botanical ingredient, a.k.a Zembrin®, answers many of the world's most pressing mental wellness needs.

Zembrin® is an excellent example of how sometimes we need to look backward to move forward. For a millennium, Sceletium plants have been consumed by the San and Khoi people of South Africa for their stress-relieving and mood-enhancing properties. Even today, these indigenous people hold this remarkable botanical in great esteem. In the last several decades, modern medicine has sought to uncover what makes this plant so unique. This paper will examine why Zembrin® is considered a gold standard for those seeking a cutting-edge mental wellness ingredient.

What is Zembrin®?

Simply put, Zembrin is derived from the succulent Sceletium plants (*Sceletium Tortuosum* (L) N.E. Br & *Sceletium Crassicaule* (Haw.) L. Bolus)), native to South Africa. These plants have green leaves and blooms with white and yellow flowers. The name is derived from the Latin word 'sceletus' (meaning skeleton) because the prominent veins on the dried leaves give the plant a skeletal appearance²⁵.

History of Sceletium spp.

As mentioned above, the use of this plant dates back at least one thousand years. Historically, the plant was used by native San hunter-gatherers and Khoi people to quench their thirst, fight fatigue, and for healing, social, and spiritual purposes. The first recorded knowledge of the 'Kanna' plant came from Dutch explorers in 1610. Still, the San people and the Khoi people used Kanna in the ancient pre-history of the African continent. The Dutch explorers and traders found the plant so valuable that they named it in their Dutch language as kougoed and traded it in the Far East²⁶.

Sceletium use reported from 1685



Waterhouse, G., DeWet, G.C., Pfeiffer, R.H., 1979. Simon van der Stel's Journey to Namaqualand in 1685. Human & Rousseau, Cape Town

What makes Zembrin® different from Kanna?

The name Kanna tends to be thrown around loosely, rather like saying Kleenex® for a tissue. Most people use the name Kleenex® as a generic term for tissue, yet not all tissues are the same, i.e., rough, thin, some have moisturizing properties, etc. The same holds true with regards to Zembrin® and its connection to the name Kanna. The chart below explains why **Zembrin® should never be regarded as being 'Kanna'**.

	Kanna	Zembrin®
Name	Generic term for Sceletium products	Patented and trademarked Sceletium extract
Phytochemical makeup	Zero guarantee the product contains the beneficial alkaloids	Standardised alkaloid profile for each batch
Potential for high levels of the psychoactive alkaloid mesembrine	High risk of high levels of mesembrine	No risk of having high levels of mesembrine
Studied	Not clinically studied	Most clinically studied Sceletium spp. extract (eight double-blind, placebo-controlled studies and counting)
Dosing	Can range from 200 mg to 500 mg	Clinically proven dose of 25 mg
Use	Used recreationally for its euphoric effect	Used to help with mood, stress, anxiety, and cognition
Growing and harvesting technique	Usually wild-harvested and uncontrolled growing	Sustainable and scalable cultivation. HG&H Pharmaceuticals, the proprietary owner of Zembrin®, has a bioprospecting permit and fulfills the conditions set out in the Nagoya protocol.
Social responsibility	No social responsibility programmes in place	Royalties paid to the communities whose indigenous knowledge contributed to product development.

Zembrin® is the **only patented, standardised, and clinically studied** Scelletium spp. extract on the market. Zembrin® contains a unique alkaloid content and composition of the four alkaloids: mesembrine, mesembrenone, mesembrenol, and mesembranol. It took five years to select the correct species of Scelletium and hone the horticultural practices to grow a crop. Special care was taken to make the proprietary selection of the non-GMO Scelletium spp. used in the production of Zembrin®. It is cultivated exclusively for HG&H Pharmaceuticals (Pty) (the proprietary owners of Zembrin®) and no others. The unique chemical fingerprint of Zembrin® is quantified with a wide range of analytical methods, including botanical matching (DNA identification), HPTLC* and HPLC**,. **Other products referred to as Kanna do not come close to this meticulous process.**

The proof is in the science

Nothing speaks louder than science! Considerable time, effort, and money have been spent on substantiating the safety and efficacy of Zembrin®. Due to Zembrin®'s uniqueness, as mentioned above, comprehensive preclinical and clinical studies have been carried out. Below you will find summaries of the clinical studies conducted to date.

Toxicity

A study²⁷ published in Food and Chemical Toxicology evaluated the potential toxicity of Zembrin®. A 14-day trial was performed with rats given up to 5000 mg/kg bw/day, while a 90-day study administered up to 600 mg/kg bw/day of Zembrin®. In the 14-day study, there were no mortalities, and the rats exhibited normal behavioural and physical conditions with no significant abnormalities in clinical signs. The 90-day study concluded that there were no observed adverse effect levels, no mortalities, and the rats exhibited normal behavioural and physical conditions with no significant abnormalities in clinical signs. These results confirm the **absence of any acute or chronic toxicity of Zembrin®.**

Safety and tolerability in humans

A published human clinical trial²⁸ was completed to evaluate the safety and tolerability of two doses (8 mg and 25 mg once daily) of Zembrin® in healthy adults over of the age of three months. The research showed that both doses of Zembrin® were well tolerated. In addition, there were **no apparent differences in vital signs, physical examination, ECG, body weight, haematology, or biochemistry parameters** from beginning to end.

Applying a 100-fold uncertainty factor to compensate for inter-and intraspecies differences, results can be extrapolated to an acceptable daily intake of **420 mg by a 70 kg human** (well below the suggested daily intake of **25 mg per day**). **Zembrin® is well tolerated.**

Efficacy

Mood, stress and anxiety

With regards to effectiveness, the study²⁹ mentioned above in 'Safety and Tolerability' also showed unsolicited positive effects on well-being in patient diaries among some participants taking Zembrin®, including **improved coping with stress and sleep difficulties**. While this is not a definitive clinically proven impact, it is worth noting as the following studies will add to these observations.

*High performance thin layer chromatography

**High performance liquid chromatography

Ideally, either stopping stress where it starts in the brain, or being able to slow down the process of feeling its effects would be the best approach to managing stress. Stressful events trigger a response from the amygdala and hypothalamus (considered to be the stress centre of the brain). One study³⁰ looked at the effectiveness of a single dose of Zembrin® in using fMRI to reduce anxiety-related amygdala reactivity and amygdala-hypothalamus coupling. The results showed that Zembrin® reduced amygdala reactivity and 'decoupled' amygdala-hypothalamus connectivity. This impact slows and/or decreases the impact of stressful events in the brain and proves the anti-anxiety effects of Zembrin®.

Two other studies using a double-blind, placebo-controlled design evaluated the effects of a single dose of Zembrin® (25 mg) on laboratory stress and anxiety in 20 healthy volunteers. In the first study, participants completed 20 minutes of multitasking, and in study two, participants completed a five-minute simulated public speaking task. The results showed that when both studies were taken together, **"results indicate that a single dose of Zembrin® can ameliorate laboratory stress/anxiety response in healthy volunteers"**³¹.

Cognition effects

A study³² with 21 cognitively healthy adults examined the neurocognitive effects of Zembrin® and assessed the safety and tolerability of Zembrin®. Each participant took 25 mg of Zembrin® daily for three weeks in a randomised placebo-controlled three week cross-over design. **Zembrin® significantly improved cognitive set flexibility and executive function compared with the placebo group. In addition, positive changes in mood and sleep were found. Zembrin® was also well tolerated.**

Another study³³ with 60 healthy volunteers consuming either a 25 mg or 50 mg dose of Zembrin® evaluated its impact on the brain's electrical activity during cognitive processing and emotional challenges. The results showed that, in comparison to the placebo, **Zembrin® induced frequency changes in the brain, which have been related to enhanced attention and memory. These results may represent a positive action of Zembrin® on cognitive and emotional processes in the brain.** Additionally, **a greater degree of calmness and memory can be extrapolated** from the increases in alpha2 waves.

Active/sports nutrition

A study³⁴ designed to investigate the use of Zembrin® on muscle soreness, markers of muscle damage, mood, and exercise performance following unaccustomed resistance exercise in 16 untrained women showed that short-term Zembrin® supplementation resulted in lower perceived soreness and greater preservation of a range of motion versus results seen in the placebo group. While mood worsened from baseline in all groups, the group taking Zembrin® did not decline as much as the placebo group. The researchers concluded that **Zembrin® supplementation might effectively reduce the markers of soreness and preserve mood, following unaccustomed eccentric exercise.**



Science summary

In all, eight pilot double-blind, placebo-controlled clinical studies in healthy people have been completed and published, paving the way for future larger clinical trials in patient populations.

- Positive effects on wellbeing were noted by participants taking **Zembrin®**, including improved coping with stress, anxiety and mood disorders.
- **Zembrin®** has been proven to positively impact the electrical activity of the brain only two hours after ingestion and significantly improve key cognitive domains i.e., cognitive flexibility and executive function. In a groundbreaking pharmaco-functional magnetic resonance imaging (fMRI) study, **Zembrin®** was found to have significant anti-anxiety activity after a single dose.
- **Zembrin®** has been proven to decrease perceived soreness following exercise, to preserve range of motion following exercise, to reduce perceived exertion and to prevent exercise-related mood disturbances.

More science is coming

A new clinical trial has commenced at the Brain, Performance, and Nutrition Research Centre, Faculty of Health and Life Sciences of Northumbria University, UK, under the supervision of Professor David Kennedy. The clinical trial will evaluate the psychological effects of eight weeks supplementation with Zembrin®: a randomised, double-blind, placebo-controlled, parallel group trial. **This study will be the first large-scale trial involving Zembrin®.**

What makes Zembrin® tick? Mechanisms of action

Zembrin® has a patented, unique dual mode of action as a potent inhibitor of 5-hydroxytryptamine (5-HT) reuptake and phosphodiesterase-4 (PDE4) activity. The advantage of dual inhibition of 5-HT uptake and PDE4 is rapid onset of action and the synergistic activity allowing low doses to be used with excellent tolerability. The study mentioned previously regarding the fMRI results validated these two mechanisms of action.

A paper published in the Journal of Ethnopharmacology³⁵ conducted broad pharmacological profiling of Zembrin®, which confirmed a unique dual mode of action as being a potent blocker of 5-HT and having powerful inhibitory effects on PDE4. The study showed that the alkaloid mesembrine was the most active against 5-HT, while the alkaloid mesembrenone was active against both the 5-HT transporter and PDE4.

What makes Zembrin® different from other mental wellness ingredients?

Looking at any health food store's 'stress/mood' section can make your head spin. Which ingredient should be taken and for what? What makes Zembrin® different from the abundance of other stress ingredients in the market? Simply put, we need to look at the mechanisms of action, the dose required, time to work (onset), and side effect profile. Note in the table below the commonly used ingredients for stress and their dose, mechanisms of action, onset, and any precautions in **red**.

Ingredient	Dose	Mechanism of action	Onset
Zembrin®	25 mg	Neurotransmitter support <ul style="list-style-type: none"> phosphodiesterase-4 (PDE4) and serotonin (5-HT) reuptake inhibition. Impact on the amygdala (stress centre of the brain) No adverse side effects here from Zembrin?	2 hours
5-HTP	150 mg - 800 mg	Neurotransmitter support <ul style="list-style-type: none"> increases the production of serotonin by the central nervous system³⁶. 	Unknown
Ashwagandha	125 mg - 600 mg	Adaptogenic Neurotransmitter support <ul style="list-style-type: none"> suppresses stress-induced increases of dopamine receptors in the corpus striatum of the brain³⁷ enhance serotonergic transmission through modulation of the postsynaptic serotonin (5-HT) receptors³⁸. 	Weeks to Months
Bacopa	300 mg	Adaptogenic Neurotransmitter support <ul style="list-style-type: none"> inhibits acetylcholinesterase activity³⁹. 	Weeks to Months
CBD/Hemp	???	More research is needed	Unknown
GABA	100 mg - 200 mg up to 3 times daily	Exerts both sedative and anxiolytic effects <ul style="list-style-type: none"> effects at the cellular level. 	1 - 2 hours
Holy Basil	500 mg	Adaptogenic	Weeks to Months
L-Theanine	50 mg - 200 mg	Inhibits glutamate reuptake Glutamate receptor antagonist <ul style="list-style-type: none"> has effects on glutamate receptors and the possibility it increases inhibitory neurotransmitters such as glycine or gamma-aminobutyric acid (GABA)⁴⁰. inhibits the reuptake of glutamate and is a glutamate receptor antagonist in the hippocampus. 	8 - 10 hours
Lactium®	150 mg - 300 mg	Neurotransmitter support <ul style="list-style-type: none"> stimulates the activity of the GABA neurotransmitters 	7 - 15 days
Lemon Balm	Limited Research	Unknown MOA <ul style="list-style-type: none"> clinical research suggests that lemon balm induces a calming effect and reduces alertness⁴¹. **Causes drowsiness**	Unknown
Rhodiola	340 mg	Adaptogenic and supports the neurotransmitters involved in the stress response by the nervous system ⁴²⁻⁴³⁻⁴⁴ .	Weeks to Months
Saffron	28 mg - 30 mg	Supports the balance of neurotransmitters involved in the stress response by the nervous system: <ul style="list-style-type: none"> inhibits reuptake of dopamine, norepinephrine, and serotonin⁴⁵⁻⁴⁶. 	1 - 2 hours
Valerian	300 mg - 600 mg	Neurotransmitter support <ul style="list-style-type: none"> impacts on GABA and Serotonin receptors. May bind directly to the GABA-a receptor⁴⁷⁻⁴⁸. **Causes drowsiness**	1 - 2 hours



It is significant to note that when addressing stress, most consumers are looking for something that "takes the edge off", while not negatively impacting their quality of life. For decades, the ingredients that work quickly have often come with unwanted side effects such as drowsiness and fatigue. The most popular 'fast-acting' ingredients for stress are passion flower, valerian, and kava, and all three come with drowsiness as a side effect. Zembrin[®], on the other hand, is fast-acting (it starts working within two hours) and, according to preliminary animal studies, does NOT cause drowsiness. Looking at the table above, **Zembrin[®] provides benefits across the board, at a low dose, is fast acting and has no known adverse effects.**

Feel good while you are feeling good

As we can see, Zembrin[®] offers a 'feel good' effect by improving the three critical areas of mental wellness – stress and anxiety, mood and cognition. If you needed more reasons to 'feel good' about Zembrin[®], it is **vertically integrated and traceable** and has a tremendous 'feel good' **social responsibility and sustainability** story.

In 2009, Zembrin[®] was awarded the first Integrated Export and Bioprospecting Permit by South Africa's Minister of Water and Environmental Affairs in Pretoria in recognition of its **environmentally sustainable production and socially responsible** indigenous benefit-sharing agreement.

Social Responsibility

- A royalty is paid to the South African San Council on all Zembrin[®] sold, in recognition of the contribution of their indigenous knowledge to the development of Zembrin[®].
- This was formalised through a ground-breaking benefit-sharing agreement signed in February 2008 between HG&H Pharmaceuticals (Pty) Ltd and the South African San Council to support both the Paulshoek and Nourivier communities in the Northern Cape Province of South Africa.
- The royalties are used for educational purposes, assisting parents who cannot afford school uniforms and school fees, and to fund farming and agricultural projects.

Sustainability with a twist

Sceletium spp. are a protected species, and wild harvesting is not sustainable for commercial products. Realizing this, HG&H Pharmaceuticals (Pty) Ltd are committed to **using only cultivated plant material** in the production of Zembrin[®] to avoid depleting threatened wild plant stocks and ensure consistent product quality.

The process to achieve sustainability

Zembrin[®] is the result of many years of research into the botany, chemistry, selection, and cultivation of Sceletium. Initial fieldwork found that indigenous people could point out locations where traditionally used Sceletium plants were regarded as 'strong' and potentially euphoria-inducing. In contrast, adjacent sites with identical-looking Sceletium plants were considered to be 'mild' and used for stress. Analytical work determined that high total alkaloid content of the euphoria-inducing and the alkaloid composition were exceptionally high in the alkaloid mesembrine. These plants are typically fermented traditionally to enhance even further the euphoriant potential. Analytical work was also done with the 'mild' plants which showed they had a lower total alkaloid content, and the alkaloid composition was low in the alkaloid mesembrine.

To have a safe, reproducible, 'mild' product suitable for functional foods and supplements, seed stock for the cultivation of Zembrin® was taken from the plants with **low alkaloid** content and **low mesembrine** composition. All subsequent work aimed to maintain a large gene pool of plants with the responsible alkaloid content and composition. The process ensured a reproducible raw material suitable for producing a consistent and safe extract. This provides more validation of how **Zembrin® is different from Kanna**.

By investing in a highly successful crop development programme and controlling the seed stock, Zembrin® can be produced on a large commercial scale. **Doesn't Sustainability Feel Good?**

It's okay to brag

Here are a few 'bragging points' for Zembrin®:

- An international best practice benefit-sharing agreement exists with the South African San Council.
- Zembrin® is the only Sceletium spp. extract endorsed by the South African San Council.
- Recipient of the first ever export permit from the South African government, full compliance under the Biodiversity Act.
- Biodiversity leadership was hailed at the United Nations Nagoya conference by the South African Minister of the Environment.
- Plant production and cultivation are ecologically sustainable and conform to the European Union and Global Good Agricultural Practices.
- Reliable supply chain and validated quality control are ensured through own propagation and production.

Vertical integration

Clear and simply put, Zembrin® is vertically integrated from the SEED to the EXTRACT. Controlling all steps from the proprietary seeds, growing location, growing practices, and extraction is essential to ensuring a quality finished ingredient. **Zembrin® offers peace of mind with its fully traceable vertical integration.**

Zembrin® is award winning

- The Functional Ingredients Magazine Editor's Choice Award was given to Zembrin® for the 2013 most sustainable ingredient.
- The Indigenous Plant Use Forum gave Zembrin® the Best Product award in 2013.

Zembrin® is patented and trademarked

Zembrin® is patent protected by international patents and new patent applications in several countries, including Australia, Europe (Belgium, France, Germany, Italy, Netherlands, Poland, Spain, Switzerland), Ireland, India, South Africa, Turkey, United Kingdom, and the USA. Zembrin® is also trademark registered as Zembren® (Malaysia), Zenbrin® (Japan), and Eletium®.



Outside the box formulating with Zembrin®

Stress is recognised as being a risk factor for other health challenges we all may face. When formulating for success, strong consideration for adding a successful stress and anxiety ingredient can add value and differentiation from other formulations. The following areas of health have stress, anxiety and mood as a contributing risk factor:⁴⁹⁻⁵⁰

- Cardiovascular health
- Memory
- Concentration
- Blood sugar control
- Sleep
- Gastrointestinal health ⁵¹⁻⁵²⁻⁵³⁻⁵⁴⁻⁵⁵ :
 - o digestion and absorption of nutrients into the body
 - o changes in gut bacteria
 - o gastroesophageal reflux disease (GERD)
 - o dyspepsia (abdominal pain upper-middle part of the stomach)
 - o erosion of the digestive lining
- Immune weakness ⁵⁶
- Skin health ⁵⁷ :
 - o acne
 - o hair loss
 - o hair thinning
 - o eczema (Atopic dermatitis)
 - o psoriasis
 - o rosacea
 - o scalp rash
 - o hives
 - o slow healing
- Fatigue ⁵⁸
- Erectile dysfunction ⁵⁹⁻⁶⁰⁻⁶¹
- Sex hormone reduction ⁶²⁻⁶³⁻⁶⁴
- Decreased sexual desire ⁶⁵
- Pain ⁶⁶⁻⁶⁷
- Headaches ⁶⁸



Due to the connection between stress and anxiety to cognition issues, the addition of Zembrin® to a cognitive formulation would provide a double benefit. Not only does Zembrin® show effects directly on cognition, it is also a powerful agent for stress and anxiety too. The benefit is a one-two punch for your finished product.

While there is no current research directly connected to using Zembrin® for these health concerns above, adding Zembrin® to help address the underlying risk factor of stress and anxiety can only help the end-user take a step in the right direction towards better health.

Regulatory

Zembrin® is sold in the US market under self-affirmed GRAS (Generally Recognized As Safe) and has been granted marketing authorisation by Health Canada as a non-prescription natural product with Product License NPN 80088325. Zembrin® is now registered in India by India's Food Safety and Standards Authority. Additional regulatory submissions are currently underway in other markets.



Summary: Putting a bow on Zembrin®

The best way to sum up Zembrin® is this: Zembrin® offers many opportunities to make health claims in **cognitive function, stress/anxiety, mood, and sports nutrition**. In addition, a complete claims dossier can be made available for those seeking more in-depth information. You can also mention the feel-good stories of **social responsibility, sustainability, vertical integration, and traceability**. Finally, let's not forget that **Zembrin® is also experiential**. Consumers these days want to be able to 'feel' their supplements working, and Zembrin® will give you this offering. Throw in the patents, trademarks, awards, and possibilities to market products 'outside the box', and you have a clear winner in Zembrin®.

Zembrin® is:

- **Great for mental wellness** - Stress, anxiety, mood, and cognition.
- **The most clinically studied Sceletium extract in the world** - Eight pilot, double-blind, placebo-controlled clinical studies.
- **Fast-acting** - Clinically proven to positively impact the electrical activity of the brain only two hours after ingestion.
- **Experiential** - Zembrin® users feel the difference it makes to their mental well-being, which guarantees repurchase.
- **Low dose** - Proven safety and efficacy at 25 mg. Great for formulation development as a single ingredient or combination product.
- **Safe** - Researchers have thoroughly studied and validated the safety of Zembrin®.
- **Easily tolerated** - Safety studies have shown that Zembrin® is well tolerated.
- **Socially responsible** - A royalty from every kilogram of Zembrin® sold is paid to the African tribes that contributed their indigenous knowledge to the development of this patented extract.
- **Ecologically sustainable** - No wild farming and depletion of indigenous stock.
- **Feel-good story** - If we were going to pick a slogan for Zembrin®, it might be "Feel good while you're feeling good." Zembrin® is the mental wellness ingredient with a truly feel-good story.
- **Fully traceable** - Strict adoption of quality control measures with EU-GMP.
- **Dual acting** - Research with Zembrin® has shown that it has a dual mechanism of action.
- **Not an anti-depressant** - but it helps with uplifting spirits and improving mood.
- **Not a stimulant** - but it helps with alertness and improves mental performance.

Samples available on request.

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