

food&health

 **SantEnergy™ Nu**

Energize your life

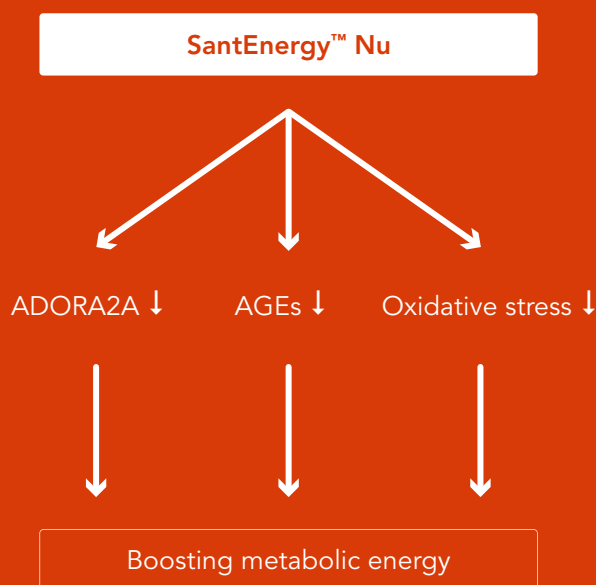


SantEnergy™ Nu

Biological Source



SantEnergy™ Nu is a unique, natural, polyphenol-rich and high quality santa herba powder extract. Santa herba (*Eriodictyon californicum*) is a member of the Borage family (Boraginaceae) and native to the Pacific Coast of North America, especially Oregon and California. Also known as yerba santa or holy herb it has been traditionally used to treat upper respiratory infections and asthma. Furthermore, antioxidant, anti-bacterial, anti-inflammatory and neuro-protective benefits have been reported in literature. Most of these health benefits were attributed to the various polyphenols present in santa herba. The aerial parts of santa herba are used to prepare SantEnergy™ Nu to ensure a high content of flavonoids such as Homoeriodictyol, Eriodictyol and Sterubin.



Mode of Action



Aging, but also unhealthy lifestyles, malnutrition and overweight could cause a low basal metabolic rate (BMR) resulting in a generally slowed metabolism and leading to a lack of energy. Typically, BMR decreases starting from midlife. Characteristic signs of an impaired metabolism may include sugar and snack cravings, chronic fatigue, frequent headaches, sleep disorders, constipation and an overall low quality of life. SantEnergy™ Nu supports the body in healthy aging with a balanced metabolic rate and metabolism by a synergistic interplay of three different mechanisms. In addition to its remarkable antioxidant activity, SantEnergy™ Nu inhibits the adenosine receptor 2A (ADORA2A, the molecular target of caffeine), resulting in an energizing effect on the cellular level. Furthermore, SantEnergy™ Nu protects against the formation of advanced glycation end products (AGEs). AGEs are formed by continuous exposure of cellular proteins to sugar, a serious risk factor for metabolic disorders. AGE accumulation in adipose and liver tissues can interfere with many protein functions contributing to a low metabolic rate and the onset of metabolic diseases.

Bioassay Study Results

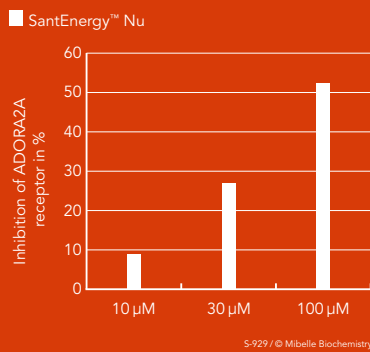


A receptor inhibition assay has been performed in order to evaluate the effect of SantEnergy™ Nu on ADORA2A activity, which results in a dose-dependent inhibition. These caffeine-like energizing effects have been confirmed in a nematode locomotion study. The nematode *Caenorhabditis elegans* is frequently used as a model organism to investigate energizing effects of natural products, as the nematode reacts to caffeine exposure comparable to humans. Energizing effects have been investigated by measurement of movement bends per time. Treatment of the nematodes with SantEnergy™ Nu increased moving bends per time with an effect comparable to

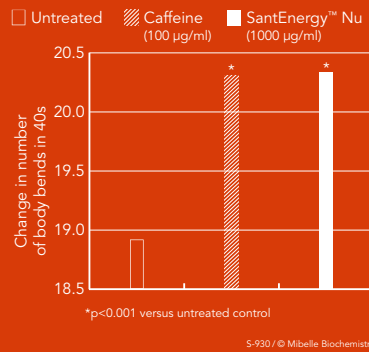
that of pure caffeine, demonstrating the energizing effects on a whole organism. Furthermore, an advanced glycation end product (AGE) assay has been performed to analyze the protective potential of SantEnergy™ Nu against the formation of AGEs. During the AGE assay, proteins are continuously exposed to sugar. AGEs are continuously formed and accumulate over time. Compared to an untreated control, the AGE levels are very low upon treatment with SantEnergy™ Nu.

Additionally, the antioxidative power of SantEnergy™ Nu has been demonstrated in the Oxygen Radical Absorbance Capacity (ORAC) test and was superior compared to well-known antioxidant plant extracts. This has also been confirmed by a cell-based protein carbonylation test.

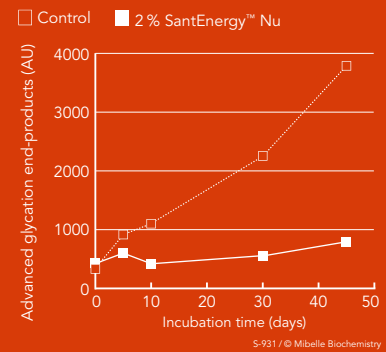
ADORA2A inhibition



Energizing effects in nematodes



Prevention of AGE formation



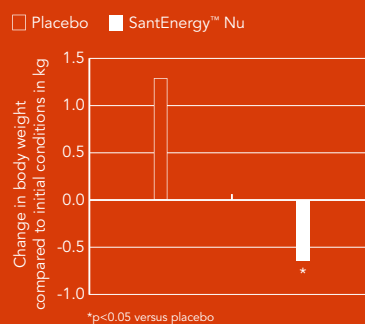
Clinical Study Results



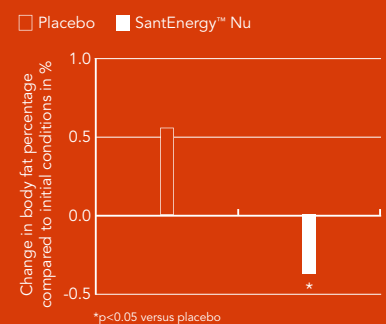
The effects of SantEnergy™ Nu on weight and body fat loss were evaluated in a randomized, double blind, and placebo-controlled study. The clinical trial was performed with 50 women having an average age of 47.5 years, who were divided into overweight (BMI 25–29) and obese (BMI 30–35) subgroups. A total quantity of 400mg of SantEnergy™ Nu was taken as hardgel capsules on a twice-daily basis over a period of three months. The most remarkable results have been demonstrated in the obese (BMI 30–35) subgroup, as SantEnergy™ Nu leads to a significant change of body weight of 2.1 kg and significant body fat reduction in comparison to the placebo group. These findings are additionally supported by a strong trend for weight and body fat loss for

the overall study subjects. Moreover, a strong trend for improved leptin levels in subjects supplemented with SantEnergy™ Nu indicates a more balanced metabolism in obese subjects in comparison to the placebo group. SantEnergy™ Nu was well tolerated during the clinical study without any signs of potential side effects.

Body weight reduction in high BMI subjects



Body fat reduction in high BMI subjects





Benefits

- SantEnergy™ Nu is a natural metabolism booster that is prepared from santa herba
- SantEnergy™ Nu exerts its benefits by a unique and synergistic triple mode of action
- ADORA2A-mediated, caffeine-like energizing effects have been confirmed in a nematode locomotion study
- Proven high antioxidative capacity and prevention of advanced glycation end product formation
- Loss of body weight and body fat demonstrated in a placebo-controlled clinical trial

Product Attributes

- Powder extract rich in antioxidant polyphenols suitable for food supplement applications
- Pleasant balsamic and incense-like taste and odor
- Recommended daily dosage of 400 mg



Suitable Product Applications

- Metabolism boosters
- Energizing products
- Antioxidant formulas
- Caffeine replacement
- Slimming products
- Prevention of metabolic disorders
- Sports nutrition
- Meal replacements

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