

B5 SAP

Science-based stress support

B5 SAP has been formulated to contain a complex of B vitamins heavily weighed to B₅ (pantothenic acid) to help support adrenal function, stress response, and healthy immune function. The combination of active B vitamins contained in **B5 SAP** is important for several body systems. Vitamin B₅ is an important part in the formation of coenzyme A, which is essential for several functions necessary to sustain life.^[1]

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Vitamin B ₅ (calcium D-pantothenate).....	250 mg
Vitamin B ₁ (thiamine hydrochloride)	50 mg
Vitamin B ₂ (riboflavin-5'-phosphate sodium)	28.6 mg
Vitamin B ₆ (pyridoxal-5'-phosphate)	28.4 mg
Vitamin B ₃ (niacinamide)	80 mg
Folic acid	100 mcg
L-Methylfolate (from L-5-methyltetrahydrofolate, calcium salt)	100 mcg
Vitamin B ₁₂ (methylcobalamin)	100 mcg
Biotin	80 mcg
Choline bitartrate.....	40 mg

This product is non-GMO.

Other ingredients: Vegetable magnesium stearate, silicon dioxide, and microcrystalline cellulose in a vegetable capsule composed of vegetable carbohydrate gum and purified water.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavour or colour, starch, or sugar.

B5 SAP contains 60 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 2 capsules daily with a meal or as directed by your healthcare practitioner. If you are taking other medications, take this product a few hours before or after them.

INDICATIONS

B5 SAP may help:

- Support healthy adrenal function and response to stress.
- Prevent depletion associated with oral birth-control medication.
- Reduce acne vulgaris lesions.

CAUTIONS AND WARNINGS

Studies have reported that the acute oral LD₅₀ values in mice and rats for pantothenic acid are 10,000 mg/kg, with a lethal dose producing death via respiratory failure.^[2] Chronic dosing for six months produced no histopathological changes, toxicity, or weight loss in rats with doses up to 2,000 mg/kg, dogs up to a dose of 50 mg/kg, and monkeys up to 250 mg/kg.^[2] Do not use if seal is broken. Keep out of reach of children.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **B5 SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.



Scientific Advisory Panel (SAP):
adding nutraceutical research
to achieve optimum health



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Pantothenic acid (vitamin B₅) is an essential vitamin for human health.^[1] Vitamin B₅ is involved in numerous biological reactions, including catabolism of fatty acids and amino acids; energy production; and synthesis of fatty acids, phospholipids, sphingolipids, cholesterol, and steroid hormones.^[1] Vitamin B₅ is also important to the synthesis of heme and the neurotransmitter acetylcholine.^[1] Coenzyme A (CoA) is essential for a variety of reactions that sustain life.^[1] Vitamin B₅ is a component of CoA, which is required for chemical reactions that generate enzymes from food as well as to synthesize essential fats, cholesterol, and steroid hormones.^[1]

Good food sources of pantothenic acid include liver (5–7 mg/100 g), kidney (4–6 mg/100 g), peanut (2–3 mg/100 g), peanut butter (5–8 mg/100 g), almonds (2–3 mg/100 g), and cheese (1.5 mg/100 g).^[2] The majority of vitamin B₅ found in foods is already in the coenzyme A (CoA) form or is found as phosphopantetheine.^[2] Processing foods with freezing, canning, refining, and cooking all cause losses of pantothenic acid, therefore an individual consuming a modern processed food diet would likely accrue lower amounts of vitamin B₅ than if they were eating a whole-foods-based diet.^[2]

VITAMIN B₅ AND ADRENAL FUNCTION

Maintenance of normative adrenal structure requires vitamin B₅.^[1] In rats that are pantothenic acid-deficient, there has been impairment in adrenocortical function reported.^[1] The specific function of vitamin B₅ in the adrenal cortex has not been thoroughly elucidated, though it has been suggested that vitamin B₅ has its effect via steroidogenesis in the adrenal cortex.^[1]

In a study involving adrenal cells from both normal (control) and pantothenic acid-treated rats, cells were isolated to measure the effects of pantothenic acid on adrenocorticotrophic hormone (ACTH) and/or prolactin-stimulated release of corticosterone and progesterone.^[1] Results showed that the rats treated with vitamin B₅ had enhanced basal levels of corticosterone and progesterone in the adrenal cells.^[1] Cells that were isolated from both control and treatment groups showed that cells originating from the treatment group required smaller amounts of ACTH to increase corticosterone levels significantly when compared with those from the control group.^[1]

When pantothenic acid becomes deficient, there are progressive morphological and functional changes within the adrenal glands.^[2] The eventual result of pantothenic acid deficiency is adrenal hypofunction, which leads to the inability to properly or appropriately respond to stress.^[2] If the pantothenic acid deficiency is addressed before the patient reaches adrenal exhaustion, the response to stress can be improved.^[2]

Induced pantothenic acid deficiency in a rat study was shown to be involved in cold sensitivity.^[2] A combination of calcium pantothenate and a small amount of hydrocortisone prolonged the survival of rats that were cold-stressed and who had been adrenalectomized.^[2, 5] Researchers also found that supplementation of pantothenic acid in rats with their adrenal gland removed allowed them to swim in cold water for as long as the rats with healthy adrenal glands.^[2] In rats with intact adrenal glands, supplementation with large amounts of pantothenic acid allowed the rats to double the length of time they were able to swim and survive in cold water.^[2]

VITAMIN B₅ AND ACNE VULGARIS

In a double-blind, placebo-controlled trial, researchers compared the results of taking pantothenic acid to placebo for 12 weeks in patients with mild to moderate acne vulgaris.^[3] Results demonstrated that there was a significant (67%) reduction in the number of total and specific facial areas in noninflammatory lesions after 12 weeks. Patients in the treatment group also reported improvements in quality of life, which was measured by the DLQI (a well-validated quantitative questionnaire), that measures the bother of unclear skin on patients with regards to behavioural, social, and mood indicators.^[3] It has been stressed that assessment of quality of life in studies testing any type of agent for facial acne lesions is important and strongly correlates with success of treatment.^[3] The study also demonstrated that vitamin B₅ was well-tolerated and safe, which was demonstrated with minimal adverse events and no changes in serum blood chemistries.^[3] Researchers are unsure of the exact mechanism, but it has been theorized that it may be due to antibacterial and skin-softening activity of pantothenic acid.^[3]

Pantothenic acid is converted into 4'-phosphopantetheine, and then to CoA, via adenosine triphosphate (ATP).^[2] CoA is important in lipid metabolism and may regulate epidermal barrier function via proliferation and differentiation of keratinocytes through CoA metabolism.^[2] There has also been an association between CoA metabolism and inflammation.^[2] The pantetheinase enzyme that recycles pantothenic acid and pantetheinase gene knockout in mice has been shown to be involved in the progression of inflammation.^[3, 4] Researchers also noted that pantothenic acid has good bioavailability in the range of 40–63%; amounts found in 24-hour urine samples have been shown to correlate with its intake.^[3]

INTERACTIONS

Research conducted in animals suggested that supplementing with pantothenic acid might augment the response to corticosteroids.^[1, 2] Women who take oral contraceptives, compared to women who do not, have significantly lower pantothenic acid levels, according to a reported study.^[2] Although pantothenic acid has not been reported to have estrogenic action, it has been shown to enhance the action of estradiol in rats.^[2]

SIDE EFFECTS AND TOXICITY

Studies have reported that the acute oral LD₅₀ values in mice and rats for pantothenic acid are 10,000 mg/kg, with a lethal dose producing death via respiratory failure.^[2] Chronic dosing for six months produced no histopathological changes, toxicity, or weight loss in rats up to a dose of 2,000 mg/kg, in dogs up to a dose of 50 mg/kg, and in monkeys up to a dose of 250 mg/kg.^[2]

REFERENCES

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