

## Vitamin B5 // Pantothenic Acid

### AT A GLANCE

#### Introduction

Vitamin B5, also called **pantothenic acid**, belongs to the group of water-soluble B vitamins. Its name originates from the Greek word "pantos", meaning everywhere, as it can be found throughout all living cells.

#### Functions

An adequate supply of pantothenic acid is important as it is incorporated into coenzyme A (CoA), a key player in all aspects of metabolism. Functions of CoA are e.g.:

- break down fats, carbohydrates, and proteins for energy generation
- produce cholesterol and bile salts
- synthesize cell membranes
- form red blood cells, as well as sex and stress-related hormones.

The European Food Safety Authority (EFSA), which provides scientific advice to assist policy makers, has confirmed that clear health benefits have been established for the dietary intake of pantothenic acid in contributing to:

- normal energy-yielding metabolism
- normal mental performance
- normal synthesis and metabolism of steroid hormones, vitamin D and some neurotransmitters
- the reduction of tiredness and fatigue.

#### Disease Risk Reduction

##### **Wound healing**

Studies, primarily in cell models and animals suggest that vitamin B5 supplements may speed up wound healing, especially following surgery. However, effects in humans regarding wound repair are inconsistent.

##### **High cholesterol and triglycerides**

Several small human studies suggest that pantethine, a derivative of vitamin B5, may help to reduce cholesterol and triglycerides in the blood of people with elevated blood lipids.

##### **Inflammatory conditions / diseases**

Some pilot studies in humans suggests that pantothenic acid supplements might help to reduce symptoms of inflammatory conditions such as diabetic ulceration, rheumatoid arthritis and acne.

### Intake Recommendations

As there is insufficient information available on which to base intake recommendations for pantothenic acid, most countries have given an estimate of safe and adequate levels for daily intake in healthy population groups, ranging from 3 to 12 mg for adults.

### Supply Situation

National nutrition surveys have shown that the estimated daily intakes of vitamin B5 in most people meet the recommendations.

### Deficiency

Since vitamin B5 occurs to some extent in all foods, deficiency is extremely rare. However, pantothenic acid deficiency in humans is not well studied and probably does not occur in isolation but in conjunction with deficiencies of other B vitamins.

Groups at risk of deficiency are alcoholics, women on oral contraceptives, people with insufficient food intake (e.g., elderly, post-operative), and people with impaired absorption (due to certain internistic diseases).

Symptoms of a vitamin B5 deficiency may include fatigue, insomnia, depression, irritability, vomiting, stomach pains, burning feet, and muscle cramps.

### Sources

The richest vitamin B5 sources are yeast and organ meats (liver, kidney, heart, brain), but eggs, milk, vegetables, legumes and wholegrain cereals are more common sources.

### Safety

Vitamin B5 is considered safe at doses equivalent to the daily intake, and at moderately higher doses. Very high doses may cause diarrhea (gastrointestinal distress) and may induce a lack of fatigue.

### Drug interactions

*Please note:*

*Because of the potential for interactions, dietary supplements should not be taken with medication without first talking to an experienced healthcare provider*

Authored by Dr Peter Engel in 2010, reviewed and revised by Ines Warnke on 24.05.2017