Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

Leucine

This information describes the common uses of Leucine, how it works, and its possible side effects.

Tell your healthcare providers about any dietary supplements you're taking, such as herbs, vitamins, minerals, and natural or home remedies. This will help them manage your care and keep you safe.

What is it?

Leucine is an essential amino acid required for muscle growth and maintenance.

Leucine is an amino acid that is not made in the human body and is required for muscle maintenance. Therefore, it has to be obtained through dietary sources rich in protein such as dairy, fish, soy, meat, poultry, beans, and eggs. Leucine is also available as a dietary supplement and is used to improve muscle strength and endurance.

Studies evaluating leucine suggest it may be useful in some populations to prevent or treat loss of skeletal muscle mass and strength, known as sarcopenia. However, evidence is inconsistent and because studies often combine leucine with other nutrients, it is hard to know which components may be responsible for potential benefits.

What are the potential uses and benefits?

- **Muscle strength and endurance**
  Some studies show that leucine improves muscle strength and endurance, but evidence is inconsistent and various products studied also contain additional nutrients.
- **Diabetes**
  Leucine may increase insulin secretion, but did not improve blood sugar levels in a clinical study of diabetic men. Further research is needed.
- **Sarcopenia**
  Leucine may be useful in some populations to prevent or treat loss of skeletal muscle mass and strength, but evidence is inconsistent and various products studied also contain additional nutrients. More studies are needed across frail, elderly, obese, and critically ill patient populations.

What are the side effects?

- May lower blood glucose levels
- May cause vitamin B3 and B6 deficiencies with excessive intake

What else do I need to know?

Do Not Take if:

- You are taking **insulin and other antidiabetic medications:** Leucine can stimulate insulin secretion and may further lower blood glucose levels.
- You have **maple syrup urine disease:** Leucine can accumulate in blood or urine resulting in dysfunction of nerve cells.
- You are taking **PDE5 inhibitors (sildenafil):** Leucine increased the effects of these drugs in animal studies, but clinical significance is not known.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

Leucine - Last updated on February 3, 2022