



Research About Dietary Effect of Branched-Chain Amino Acids to Treat Hepatic Encephalopathy Patient in King Khalid Hospital

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A branched-chain amino acid (BCAA) is an amino acid having aliphatic side-chains with a branch (a carbon atom bound to more than two other carbon atoms). Among the proteinogenic amino acids, there are three BCAAs: leucine, isoleucine and valine.

The BCAAs are among the nine essential amino acids for humans, accounting for 35% of the essential amino acids in muscle proteins and 40% of the preformed amino acids required by mammals.

Dietary BCAAs are also used in the treatment of some cases of hepatic encephalopathy.

Branched-chain amino acids (BCAAs) constituting of valine, leucine, and isoleucine act as both substrates of proteins and as key regulators for various nutrient metabolisms. Patients with liver cirrhosis frequently lack sufficient BCAAs and therefore suffer from various metabolic disorders. Hepatic encephalopathy (HE) is a severe metabolic disorder with neurologic manifestations such as flapping tremors and coma in patients with liver cirrhosis. In addition, a mild form of HE known as minimal HE (MHE) is an important social issue because it occurs in up to 80% of patients with chronic liver disease and affects prognosis and activities of daily living, possibly resulting in falls and motor vehicle accidents. Although HE/MHE can be caused by various pathological conditions, including in an accumulation of mercaptans, short-chain fatty acids, and alterations in the gut flora, hyperammonemia has also been implicated in an important pathogenesis of HE/MHE. Besides urea cycle of liver, ammonia can be detoxified in the skeletal muscles by the amidation process for glutamine synthesis using BCAAs. Thus, BCAA supplementation may enhance detoxification of ammonia in skeletal muscle and may be a possible therapeutic strategy for HE/MHE. In this review, we summarize the clinical impacts of BCAA supplementation on HE/MHE and discuss possible

mechanisms for a BCAA-induced improvement of HE/MHE. Furthermore, we present some modifications of oral BCAA therapy for improvement of efficacy in HE treatment. We also briefly describe pleiotropic benefits of BCAAs on life-threatening events and overall prognosis in patients with liver cirrhosis [1-3].

The best dietary sources of BCAAs

Food	BCAAs	Leucine	Isoleucine	Valine
Chicken breast	6.6g	2.9g	1.8g	1.9g
Canned Tuna	5.6g	2.5g	1.5g	1.6g
Salmon, wild	5.9g	2.7g	1.5g	1.7g
Flank Steak	6.2g	2.8g	1.6g	1.8g
Tilapia	5.9g	2.7g	1.6g	1.6g
Egg White, Large	0.8g	0.3g	0.2g	0.3g
Peanuts, Dry Roasted	6.8g	3.1g	1.7g	2g

Bibliography

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