closest to casein, which is typically made up of about 42% essential amino acids and 20% branched-chain amino acids.[5]

Lipid-Lowering Effects

While cardiovascular disease is the leading cause of death in the United States, lowering cholesterol levels is one measure that alleviates this health risk. The hypolipidemic effects of rice protein are promising, but so far they have only been shown in animal data.

In one study, Japanese researchers compared the effects of casein, soy protein isolate, and rice protein isolate on lipid metabolism in rats.[6] Rats were divided into groups and fed diets with varying protein sources and protein levels for 18 days. Results indicated that, at a level of 400 g of protein/kg of body weight, rice protein diets produced significantly lower serum cholesterol concentrations than casein diets.

A team of Chinese researchers reached similar findings with rats fed rice protein versus casein, but it also concluded that the cholesterol-lowering capabilities of rice protein could be related to its lower digestibility and method of extraction.[7] Here, total cholesterol and LDL cholesterol were significantly lower in rice protein isolate diets compared to casein diets.

Anti-Hypertensive Effects

As many as 67 million Americans have high blood pressure, and health care providers might one day prescribe rice protein to remedy it. Though this area of research is still emerging, scientists at Jiangxi Agricultural University in China investigated the *in vitro* and *in vivo* anti-hypertensive effects of rice protein hydrolysates.[8] Results showed a significant decrease in systolic blood pressure following a single oral dose of rice protein hydrolysates at 600mg/kg of body weight in spontaneously hypertensive rats. From the rice protein hydrolysate, the researchers isolated a compound with angiotensin converting enzyme (ACE)-inhibitor activity, which also yielded significant decreases in blood pressure after a single oral dose.

Muscle Building and Repair

Although whey has long since reigned as the go-to sports protein, new sources of protein and protein blends are gaining steam on the market. Greater awareness of environmental issues and a desire to revert back to more "natural" ingredients have strengthened the platform for more plant-based products rather than animal-based ones. Yet, little was known about the ability of rice protein as a sports nutrition supplement until recently. Results of a study published in *Nutrition Journal* in June 2013, found that trained athletes experienced similar increases in acute recovery and obtained significant gains in muscle, power, and strength whether they were taking a rice protein or whey protein supplement following resistance training for eight weeks.[9]

The U.S. Pharmacopeial Convention is currently developing a monograph standard for rice protein, which will help manufacturers avoid misbranding and adulteration.

Future of Rice Protein

Considering its novelty and plant-based origin, rice protein has much to offer for consumers and formulators. But not all rice proteins are created equal. Differences in rice variety, extraction method, protein concentration level, GMO status, growing conditions, and country of origin are a few ways to distinguish quality and nutritional benefit. Fortunately, the U.S. Pharmacopeial Convention is currently developing a monograph standard for rice protein, which will help manufacturers avoid misbranding and adulteration.

Rice protein's forthcoming is nothing short of astonishing. Emerging technologies have already allowed for the development of rice protein with improvements in suspension, thereby alleviating previous challenges with miscibility for beverage and nutrition applications. And extrusions and meat analogs are among other impressive advances.

Protein is undoubtedly a hot topic in the food industry, and demand for natural food products underscores this increasingly valuable ingredient. Whether for nutritional benefit, medical necessity, or functionality, rice protein may continue in rice's legacy to provide sustenance for many years to come.

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