

Transgenic high-lysine rice may offer a truthful solution to malnutrition?

Amino acids are among the most important components in living organisms being the backbones of proteins that are critical to the survival of all living organisms, including plants. Unfortunately human beings and most of their farm animals (such as chickens, cows and sheep) cannot synthesize the amino acid lysine (Lys) needed for protein synthesis, and hence, they absolutely depend on the absorption of this so called “essential” amino acid from external sources, mainly from crop plants, but also to a much lower extent from farm animals whose diets depend mainly on plant feeds.

Among the essential amino acids that human cannot synthesize, the amino acid lysine (Lys) is of particular importance nutritionally, since it is synthesized at particularly low level in plants, rendering plants as insufficient providers of this highly critical essential amino acid in human foods and livestock feeds. Attempts to improve Lys production in plants by classical genetic means have so far met with a very limiting success. This is because Lys is naturally synthesized at very low levels in plants and this essential amino acid is also efficiently degraded (catabolized) to generate energy-containing components that are critical for plant growth. To produce plants with enriched Lys levels, we used a genetic a genetic engineering approach (called GMO for “genetically modified organisms”).

This approach led to the generation of crop plants containing proteins enriched in Lys level. Such Lys-enriched crop plants could contribute significantly to human health when enriched in their diets.

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[Transgenic high-lysine rice - a realistic solution to malnutrition?](#)

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