B-64: Amino acid analysis of traditional and improved rice, their wild species and mung bean

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Rice, our staple food, has a protein content of about 7%. It is the major source of protein for most poor people. Humans require 8 of the 25 common amino acids in their daily diet. Protein malnutrition is usually due to a diet deficient in 1 or more of these essential amino acids. When there is heavy dependence on plant protein from a single source, its amino acid composition becomes of critical importance. Mung bean, a popular grain legume of Sri Lanka, is a cheap source of protein for people who cannot afford animal products. A knowledge of the amino acid content of Sri Lankan rice and mung bean is important in developing new cultivars.

Six traditional rice (Pachchaperumal, Heenati, Dahanala, Podi wee, Ma wee), 3 improved types (Bg 300, Bg 450, Bg 579-2), 3 wild species *(Oryza nivara,* O. *eichingeri,* O. *glaberrima)* and 10 accessions of mung bean (01983, 02741, 02736, 02963, 03022, 03046, 03047, 03032, 02205, 02739) were studied. After dehusking, each rice seed sample was ground, defatted with acetone and 10 mg of the seed powder (defatted) was hydrolysed with 6N HC1 and 0.01% phenol at 150°C for 1 h. The same procedure was followed for seeds of mung bean accessions. The hydrolysed samples were diluted (Dahanala & Pachchaperumal 60 times, other rice 40 times and mung bean 150 times) with 0.2 N HC1 for analysis. The amino acid analyser used (K 202 SN Kyowa) was standardised with standard amino acid mixture (type H, Wakopure).

All the traditional rice cultivars had better amino acid profiles than the improved cultivars and wild species. Pachchaperumal was the best and H_4 was more or less similar to O. *nivara.* O. *eichingeri was* closer to O. *nivara* than to O. *glaberrima.* Podi wee was close to Ma wee. Bg 579-2 had the weakest profile.

Of the mung bean accessions, 02963, 03022 and 03046 were rich in amino acid content, 03047, 03032 and 02205 were a little lower, and 01983, 02741, 02736 and 02739 were poor. These last 4 had black pods or "Kalu Karal". In all accessions, the methionine content was very low.