Consideration of utilisable amino acid content in dietary protein quality assessment

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Background

- Current evaluation systems for protein quality focus only on indispensable amino acids (IAAs) and do not consider the dispensable amino acids (DAAs) content
- When excess levels of IAAs are present, DAAs may actually become limiting
- Data to estimate utilizable, oxidized, and non-absorbed amino acids in different dietary protein sources are available from the protein quality evaluation methods such as digestible indispensable amino acid score (DIAAS) studies

Aims

- To estimate levels of utilizable amino acids for dietary protein sources
- To illustrate the complementary effect of two dietary protein sources for maximizing amount of utilizable amino acids

Methods

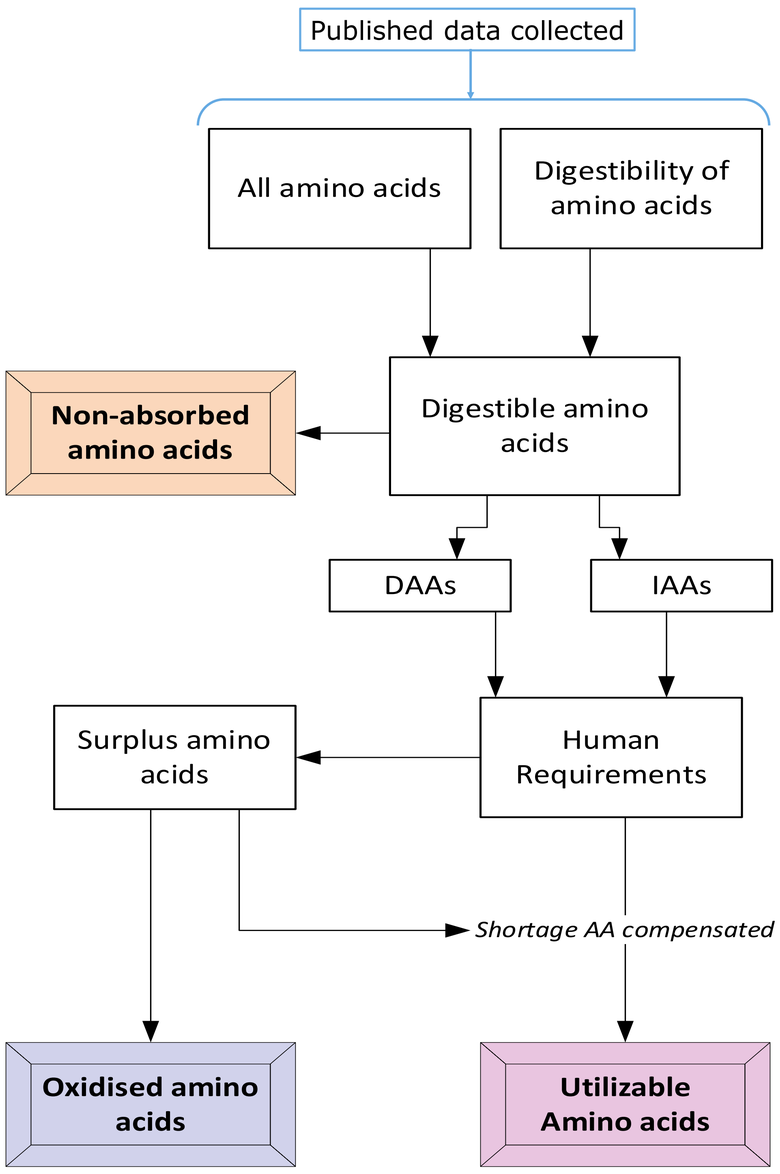

Figure 1: Structural outline for methodology

Result for individual dietary protein sources

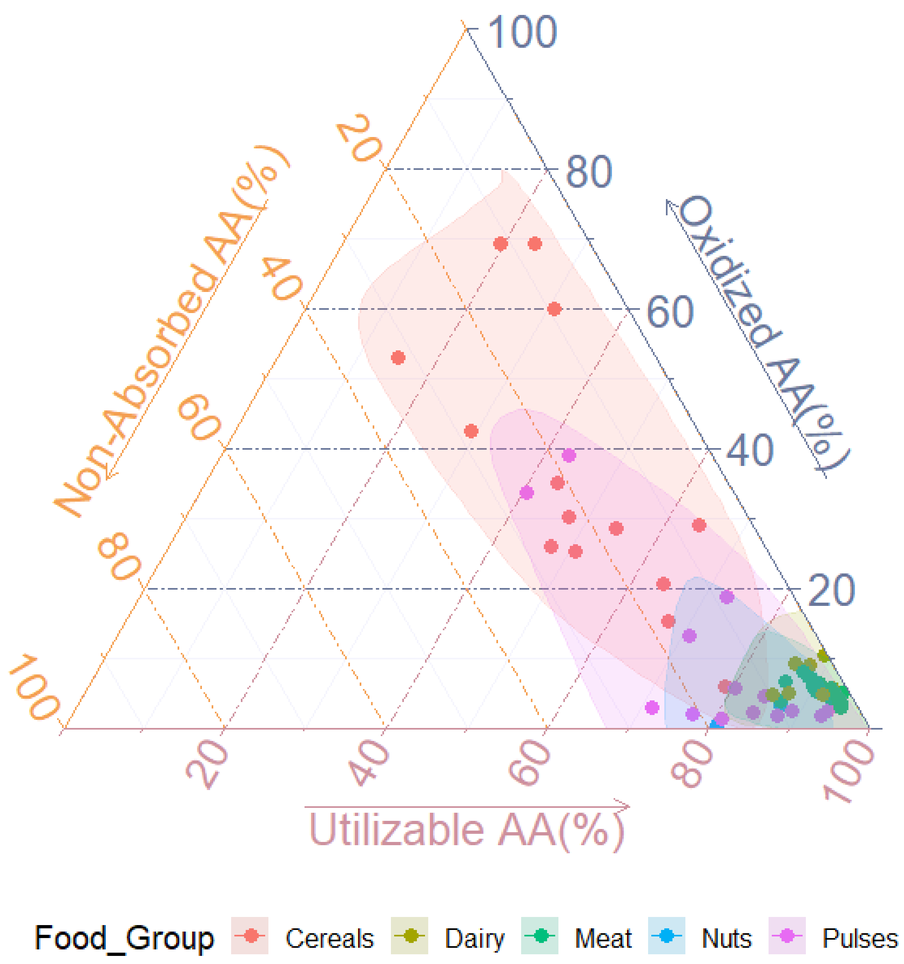

Figure 2: Proportion of utilizable, oxidized, and non-absorbed amino acid in different dietary protein sources

Conclusions

- Taking DAAs into account in protein quality estimation gives better insight on actual amount of utilizable amino acid
- Highest DIAAS score does not always reflect maximum utilizable amino acids in dietary protein sources and mixtures thereof
- Complementarity of dietary protein sources to increase utilizable amino acid is depended on the amino acid profile of individual sources

Result for combination of different dietary protein sources

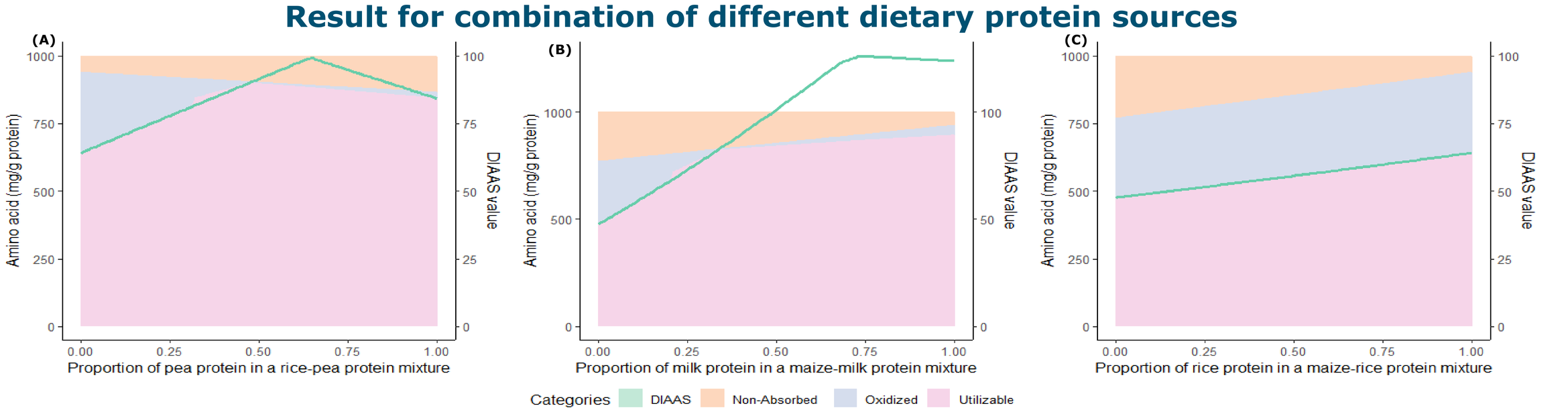

Figure 3: Amount of utilizable, oxidized and non-absorbed amino acid and DIAAS value for combination of different dietary protein sources where dietary protein are from rice and peas (A) maize and milk (B), and maize and rice (C)

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