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Title

Growth retardation induced by protein and indispensable amino acid deficiencies cannot be catch up by a supplementation in growing rats

Authors

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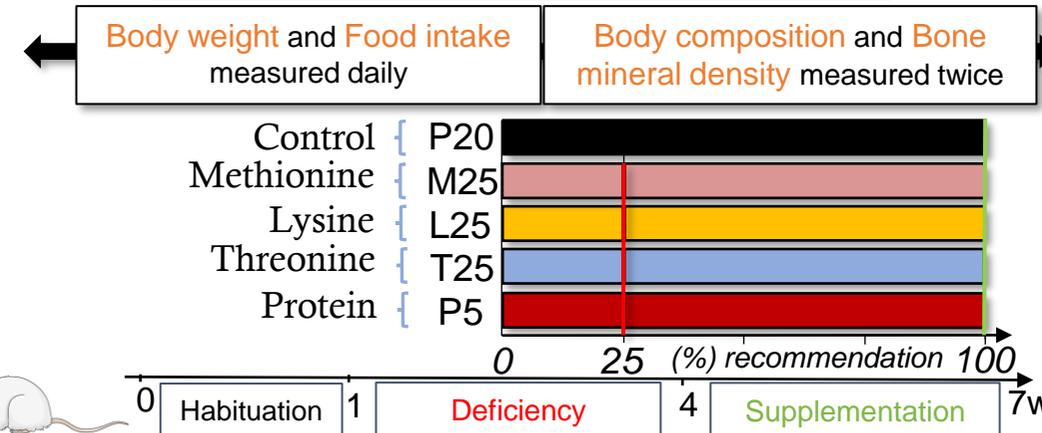
Background and Objectives

In developing countries, children are exposed to a growth retardation risk due to their low protein intake or the poor quality of the consumed protein sources.

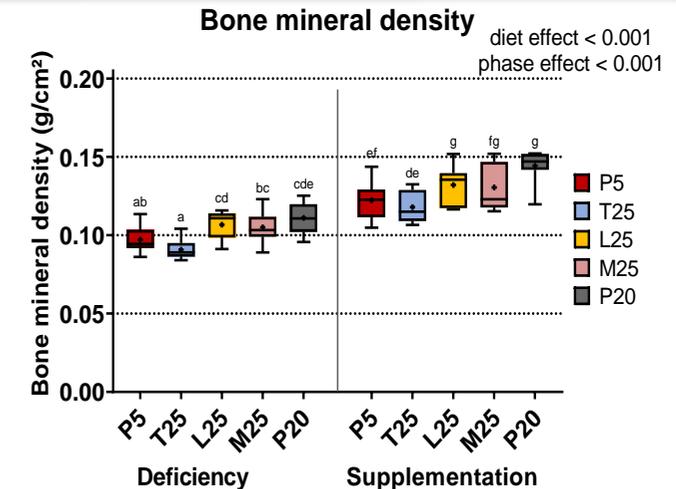
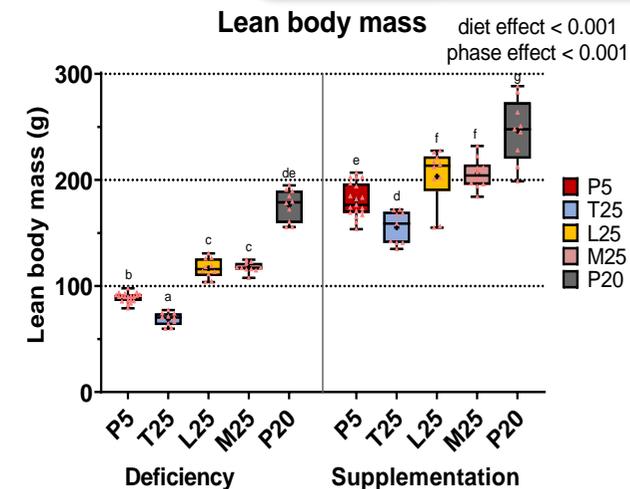
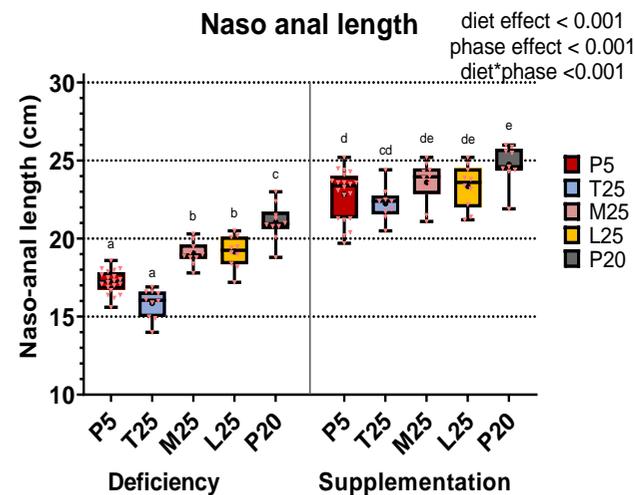
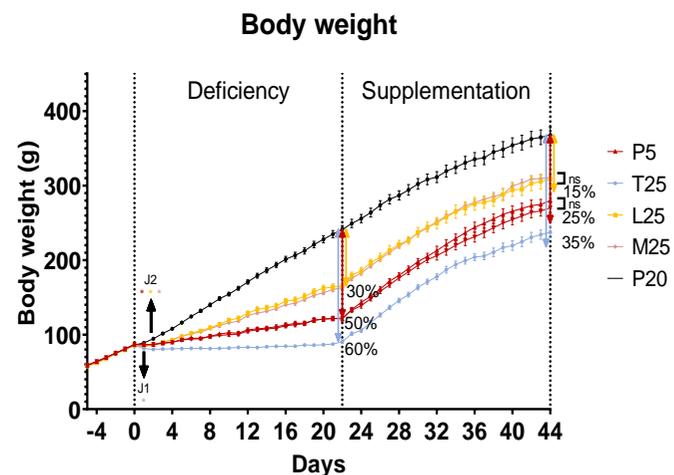
However, the specificity of each indispensable amino acid (IAA) and the ability of children to catch-up their growth retardation after shifting back to an adequate diet remains unclear.

The aim of this study was to assess the supplementation efficiency following a protein or IAA (lysine, threonine, and methionine) deficiencies in growing rats, and to identify the specific IAA deficiency effect.

Methods



Results



- A single IAA as protein deficiency \searrow BW and length, and the lean body mass is highly affected.
- A P20-equivalent supplementation permit growth resume but no catch-up growth, as all the gaps observed during deficiency remains slightly the same after supplementation.
- Kidney, muscle and carcass weight remains reduced after supplementation. But only protein and threonine deficient still have reduced liver weight after supplementation.
- Only protein and threonine deficiencies \searrow bone mineral density.

Conclusions

- A single IAA, as protein deficiency, induces growth retardation, and the lean body mass is highly affected.
- A supplementation to the level of recommendation (two fold the estimated requirement in other works) allows growth resume, but the growth retardation is not catch up.

Keywords

IAA deficiency, Protein deficiency, Protein quality, Growth retardation, Catch up Growth

Conflict of Interest

All the authors declare no conflict of interest