

# Comparison Guide

## GLYCOMACROPEPTIDE (GMP) vs AMINO ACIDS

	GMP	AMINO ACIDS
Protein Source	Natural intact protein	Synthetic amino acids
Absorption	<p>Slower absorption<sup>1,2</sup></p> <ul style="list-style-type: none"> <li>• Greater satiety suggesting improved compliance               <ul style="list-style-type: none"> <li>• Lower ghrelin levels (hunger hormone) after meal consumption vs AAs</li> </ul> </li> <li>• Improved protein retention, Phe utilization               <ul style="list-style-type: none"> <li>• lower serum BUN, higher Insulin levels, and increased circulating AA levels</li> </ul> </li> <li>• Phe stabilization               <ul style="list-style-type: none"> <li>• Less Phe variation throughout the day</li> </ul> </li> </ul>	<p>Faster absorption<sup>1,2</sup></p> <ul style="list-style-type: none"> <li>• Amino acids are in their readily available form making them easier to absorb, suggesting:               <ul style="list-style-type: none"> <li>• Reduced satiety</li> <li>• Lower protein retention</li> <li>• Phe level fluctuations</li> </ul> </li> </ul>
Large Neutral Amino Acids (LNAA)	<p>Naturally high levels of LNAA: threonine, isoleucine, valine</p> <ul style="list-style-type: none"> <li>• Competes with phe at blood brain barrier and reduces intestinal absorption of Phe</li> </ul>	Synthetic amino acids source
pH	Neutral pH does not contribute to dental erosion <sup>3</sup>	Amino acids based formulas typically have an acidic pH which may contribute to dental erosion <sup>3</sup>
Osmolality	Lower osmolality improves GI tolerance <sup>4</sup>	High osmolality may cause GI distress
Taste	Delicious, non-bitter taste preferred by 91% of patients over amino acids in a published study <sup>2</sup>	Acidic, bitter, metallic taste
Phenylalanine	Naturally contains a small amount of Phenylalanine (1.5mg/g of protein) which needs to be calculated into patients daily allowance	Phenylalanine free

### REFERENCES:

1. MacLeod, E. L., Clayton, M.K., van Calcar, S.C., & Ney, D. (2010). Breakfast with glycomacropeptide compared with amino acids suppresses plasma ghrelin levels in individuals with phenylketonuria. *Molecular Genetics and Metabolism*, Aug 100, 303-308.
2. Van Calcar, S.C., MacLeod, E.L., Gleason, S.T., Etzel, M.R., Clayton, M.K., Wolff, J.A. & Ney, D.M. (2009). Improved nutritional management of phenylketonuria by using a diet containing glycomacropeptide compared with amino acids. *The American Journal of Clinical Nutrition*, 89, 1068-1077.
3. Touger-Decker, R., van Loveren, C. Sugars and dental caries. *The American Journal of Clinical Nutrition*, 78, 8815-8925.
4. Dietitian's Handbook of Enteral & Parenteral Nutrition (2012). Edited by: Annalynn Skipper. Chapter 19: Enteral Nutrition. Page 268.