Greater satiety, stable blood phenylalanine and stable nutrient intake in patients with Phenylketonuria taking a Glycomacropeptide-based protein substitute for 28 days

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Objectives:
This study evaluated the effects of supplementation with a glycomacropeptide-based protein substitute (GMP-PS; Phenylade® GMP Drink Mix, Nutricia) on appetite, nutrient intake and blood amino acids (phenylalanine, tyrosine) in patients with Phenylketonuria.

Methods:
18 patients (mean age=22y, range=4-50) were prescribed a dietitian-determined amount of GMP-PS for 28d, with phenylalanine intake from food adjusted as appropriate (phenylalanine in GMP-PS=15.3mg/10g Protein Equivalent) and compliance self-reported daily. Mean visual analogue scale ratings of fullness, hunger and desire to eat were calculated from 3d periods at baseline and end of study, respectively. At baseline and end of study visits weight was measured, and energy, protein and phenylalanine intake were assessed via 24hr dietary recalls. Patients provided fasting bloodspots at baseline and on days 7 and 28 of taking GMP-PS, for blood phenylalanine and tyrosine analysis.

Results:
Mean GMP-PS prescription was 32% (SD 17) of protein requirements, with 90% (SD 26) compliance observed. Whilst taking GMP-PS patients reported significantly increased fullness (+29%, p=0.002) alongside non-significant reductions in hunger (-22%, p=0.067) and desire to eat (-18%, p=0.107), despite no significant changes in energy, protein or phenylalanine intake (p>0.05 for all). Weight remained stable for patients ≥16yrs (p>0.05) and increased in children (<16yrs) as expected (+0.5kg, p=0.035). Mean blood phenylalanine remained stable (Baseline=377µmol/L, Day 7=369µmol/L, Day 28=398µmol/L; p=0.513) whilst blood tyrosine increased (Baseline=45µmol/L, Day 7=52µmol/L, Day 28=57µmol/L; p=0.02; n=12).

Conclusion:
Phenylade® GMP Drink Mix improved satiety and blood tyrosine concentration in patients with Phenylketonuria whilst maintaining nutrient intake, body weight and blood phenylalanine levels.

This abstract was presented as a poster at the 2018 bi-annual meeting of Genetic Metabolic Dietitians International (GMDI); Orlando, FL; April 26, 2018

The research was funded by Nutricia Ltd. UK