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Acute Effects of Essential Amino Acid Gel-based and Whey Protein Supplements on Appetite and Energy Intake in Older Women

Dr Theocharis Ispoglou

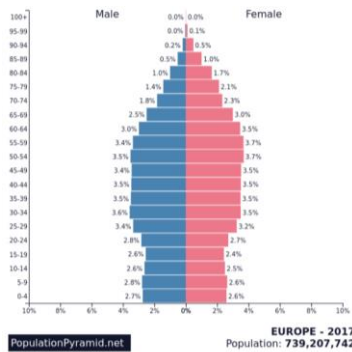
Reader in Nutrition and Muscle Health

Active Ageing in Health and Disease (SARCA) theme coordinator



@Theo_Ispoglou

Key drivers of our research



Common clinical disorders

- CVD
- Hypertension
- Raised cholesterol
- ECG abnormalities
 - Diabetes
 - Obesity
- Respiratory disease
- Thyroid disorders (hypo/hyper)
- Renal disorders
- Liver disorders
- Anaemia
- Osteoporosis
- Psychiatric problems
 - Cancer

Functional ageing

- Lung function (FEV1, FVC)
- Grip strength
- Standing balance
- Chair rising
- Walking speed
- Verbal memory
- Processing speed
- Reaction time

$P \leq 0.01$ —————→
 $0.01 < P \leq 0.05$ - - - - ->

Kuh et al. (2014)

- Ageing population
- Sarcopenia and its implications on health span

EWGSOP2 (2018) and Mayhew et al. (2018)



- Increase in **protein intake** for managing sarcopenia (Janssen et al. 2004a; Clark et al. 2010; Lang et al. 2010; Lieffers et al. 2012). Evidence supports $1.0\text{-}1.6\text{ g}\cdot\text{kg}^{-1}\cdot\text{d}^{-1}$ (Bauer et al. 2013; Deutz et al. 2014; Loenneke et al. 2016; Traylor et al. 2018).
- **Energy intake** also crucial for maintenance of muscle mass and health (Dahany et al. 2014; Thalacker-Mercer et al. 2014; Baum et al. 2016).
- Deficiencies in **energy and protein intakes** contributing factors to frailty (Beasley et al. 2010; Bauer et al. 2013; Bonnefoy et al. 2015).

Examples of what ~ 30 g protein looks like.....



- Consumption of **at least $0.4\text{ g}\cdot\text{kg}^{-1}\cdot\text{BM}$** of high quality protein per meal (Moore et al. 2014; Phillips 2015; Lancha Jr et al. 2016) is also recommended.
- High essential amino acid (**EAA**) content optimises muscle protein synthesis (Breen et al. 2011; Churchward-Venne et al. 2014; Paddon-Jones et al. 2014; Xu et al. 2015; Murphy et al. 2016; Phillips 2016; Hamarsland et al. 2017).

Challenge: age-related anorexia and satiating effects of protein.

Potential solution: use of protein based nutritional supplements that do not affect appetite.



Isopoglou et al. Nutrition Journal (2017) 16:75
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Nutrition Journal

RESEARCH

Open Access

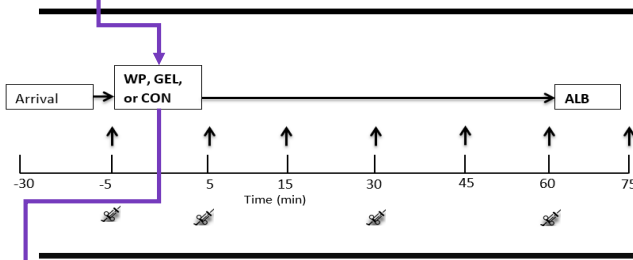
Novel essential amino acid supplements enriched with L-leucine facilitate increased protein and energy intakes in older women: a randomised controlled trial

Theocharis Isopoglou^{1*}, Kevin Deighton¹, Rodenick FGJ King¹, Helen White² and Matthew Lees¹

Isopoglou et al. (2017)

Methods

Crossover design (3 conditions)



The WP and GEL provided ~ 7.5 g of EAAs or the equivalent of ~15 g of high quality protein



N=10

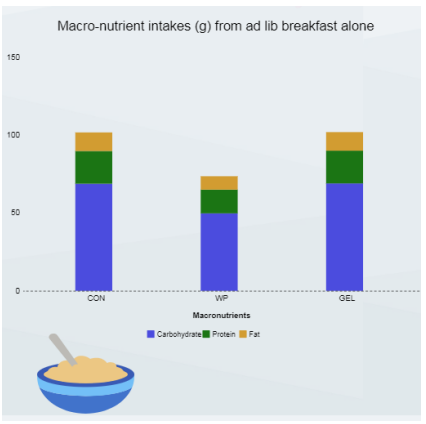
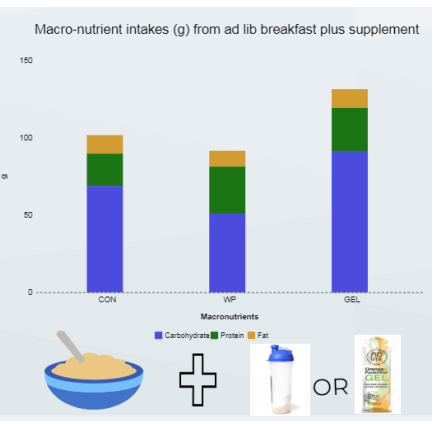
69.2 ± 2.7 years of age

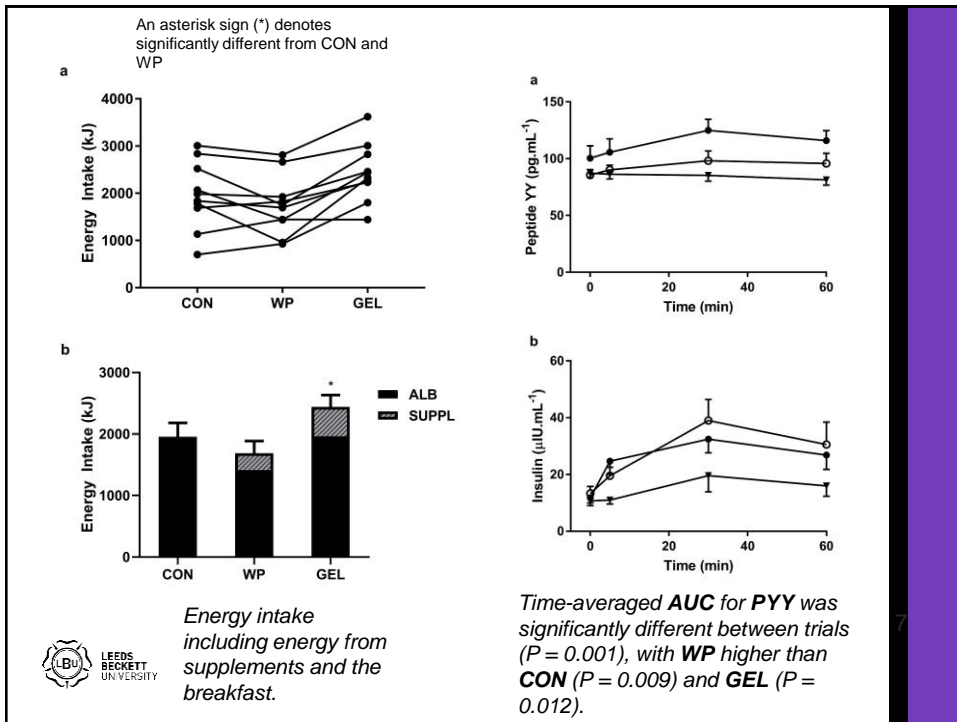
Body mass of 60.8 ± 7.1

Height of 163.1 ± 3.0 cm



Results





Conclusion

A **whey protein** isolate **facilitated** an increase in **protein** , whereas supplementation with an **essential amino acid based gel** increases **in both energy and protein intakes** , when consumed before an ALB.

*Findings, highlight potential gel-based **EAA**s supplementation intake for addressing age-related sarcopenia.*



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