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An investigation into the palatability of a new glycomacropeptide based protein substitute among a sample of phenylketonuria patients.

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Phenylketonuria (PKU) is an inherited rare metabolic disorder that is caused by a lack of the enzyme phenylalanine hydroxylase. One in every 4,545 infants born in Ireland have PKU[(1)]. This condition is managed by a low protein diet and the consumption of nutritional supplements that provide all essential amino-acids. However, the palatability of these supplements is often unpleasant, as they are formulated with pure amino-acids[(2)]. Glycomacropeptide (GMP) is a by-product of cheese making that is naturally low in phenylalanine, while still being a rich source of amino-acids. As it is a natural protein source, it has improved palatability and texture, and is a suitable alternative to aminoacid based supplements[(3)].

The aim of this study was to evaluate the palatability of a new GMP based protein substitute PKU GMPro Ultra, Lemonade and Vanilla flavours, among a sample of PKU patients, and assess their expected compliance of using this product.

Samples of the study product were available for monadic taste testing at two patient events that took place in December 2023 and March 2024. All PKU patients attending were eligible to take part. The taste test was not blinded, as the patients were aware they were tasting either the lemonade or vanilla flavoured study product. Patients sampled ~20ml of the study product and then answered a short six-question survey. This included questions on age, gender, the rating of the product out of 5 (5 being the highest and 1 being the lowest) and expected compliance of one serving of the product (180ml). Compliance was measured using a Likert scale. Data was analysed using IBM SPSS v29 to calculate frequencies, mean and standard deviation.

A total of 21 PKU patients taste tested the study samples. The mean age of patients was 17.88 years (SD 12.9), with 67% of participants being aged 16 years or younger. With regards to taste, it was found that 62% (n = 13) of patients rated the product either 4/5 or 5/5, therefore rating the product satisfactory[(4)]. The other 38% (n = 8) rated the product between 1 to 3 out of 5. Patients were also asked how likely it was that they would finish a whole serving of the study product. 67% (n = 14) reported that they were likely to complete one serving of the study product, while 33% (n = 7) stated they were unlikely to finish a whole serving.

In this sample of PKU patients, the majority found the new GMP based protein substitute to be palatable. These substitutes have been shown to be highly palatable, safe and acceptable alternatives to amino-acid based protein substitutes, which may improve dietary compliance[(5)]. It is important that patients have a wide choice of protein substitutes, which are convenient, flexible and avoid taste-fatigue.

References

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