

Glycomacropeptide Derived from Cheese Whey: Treating Obesity by Manipulating Satiety Hormones and the Gut Microbiota

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Enriching Human Health and Nutrition

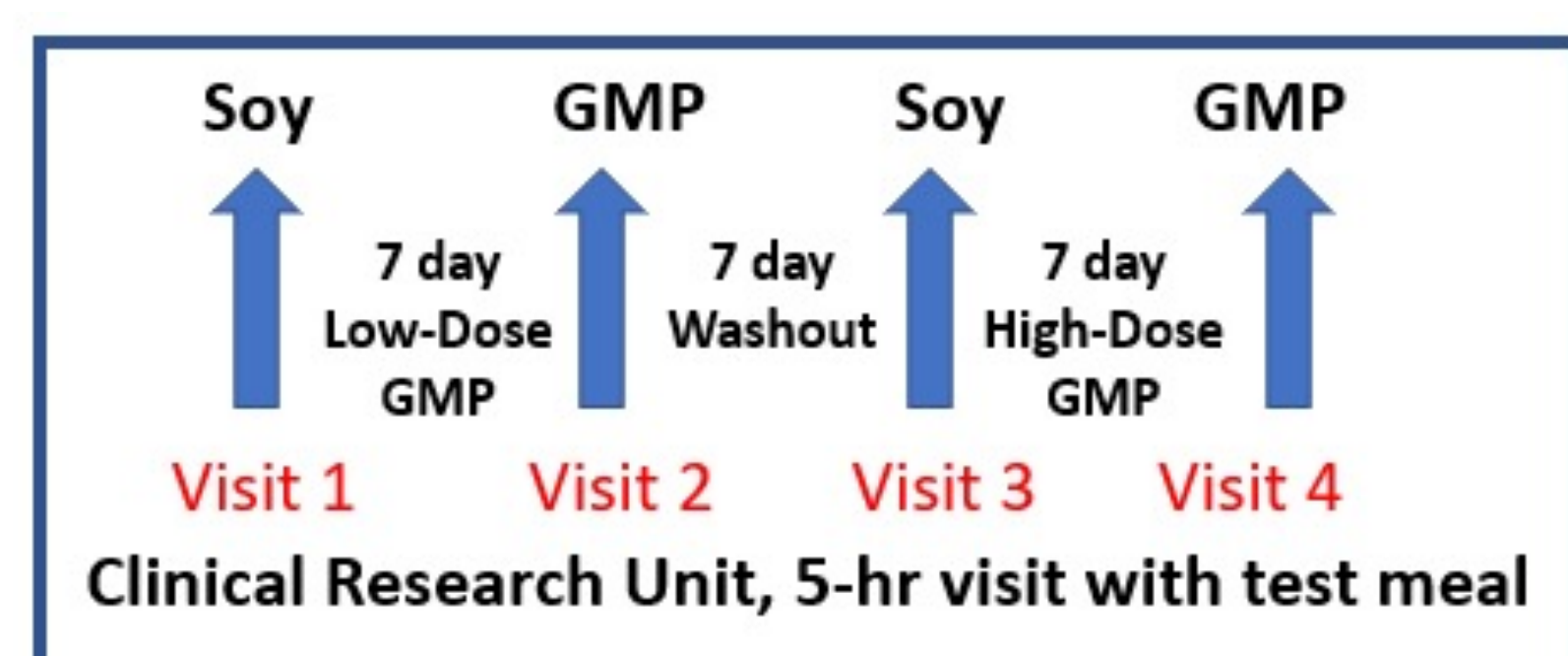


Abstract

Obesity affects 1 in 3 adults and contributes to premature death. Glycomacropeptide (GMP) is a 64 amino acid glycoposphopeptide isolated from cheese whey which shows anti-obesity effects.

Objective: to evaluate the effect of a GMP supplement (130 kcal, 25 g protein) on satiety hormones, inflammation, glucose levels and the gut microbiota in 10 obese, postmenopausal women.

Methods: Subjects will consume a premeal low-dose GMP supplement (twice daily) and high-dose GMP supplement (thrice daily) for 7 days each. Subjects will be admitted to the UW Clinical Research Unit for four, 5-hr visits where they will consume a soy (baseline control) or GMP test meal and provide blood, urine and fecal samples.

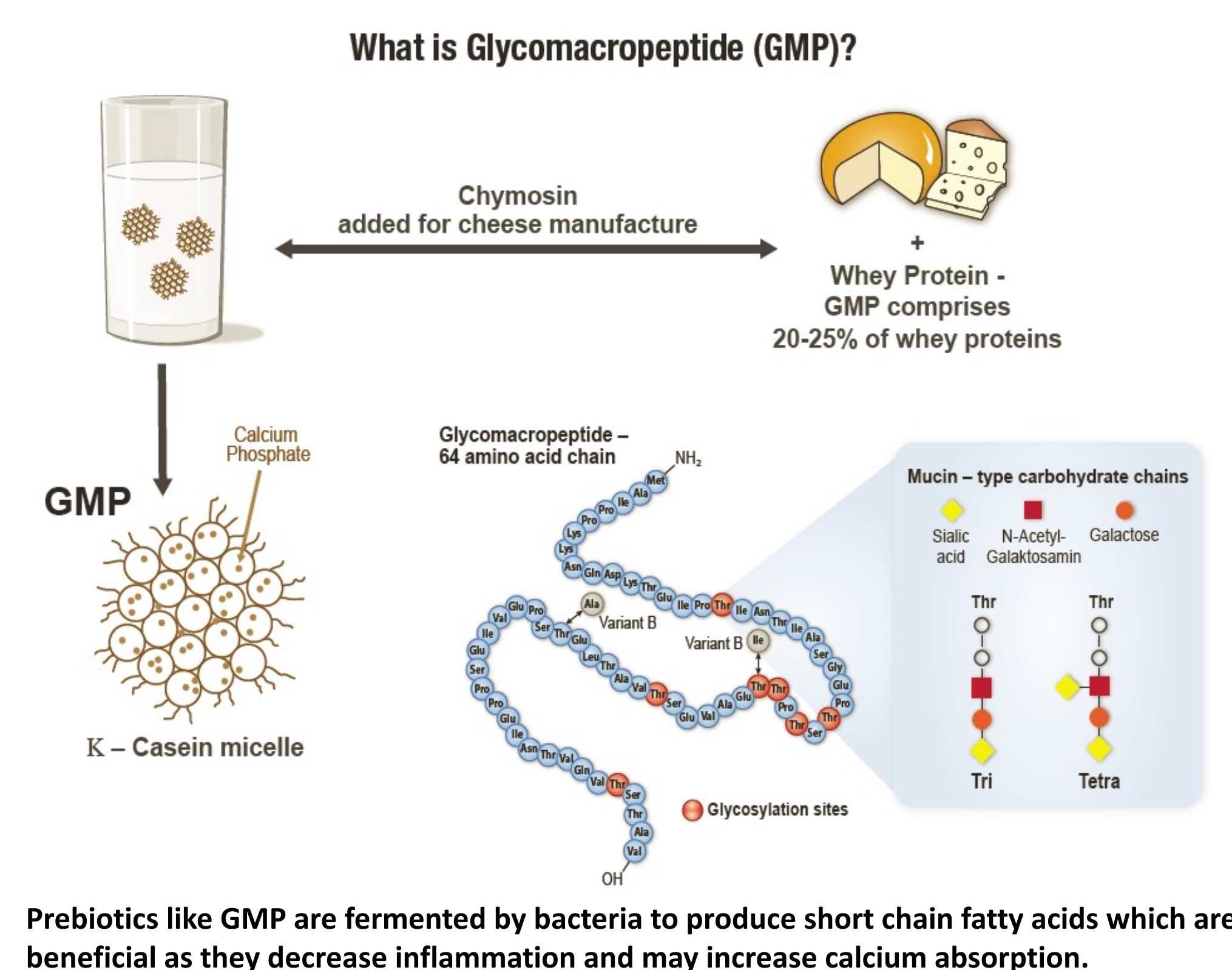


The **tangible outcome** is creation of a novel GMP protein supplement that treats obesity while promoting bone health in women.

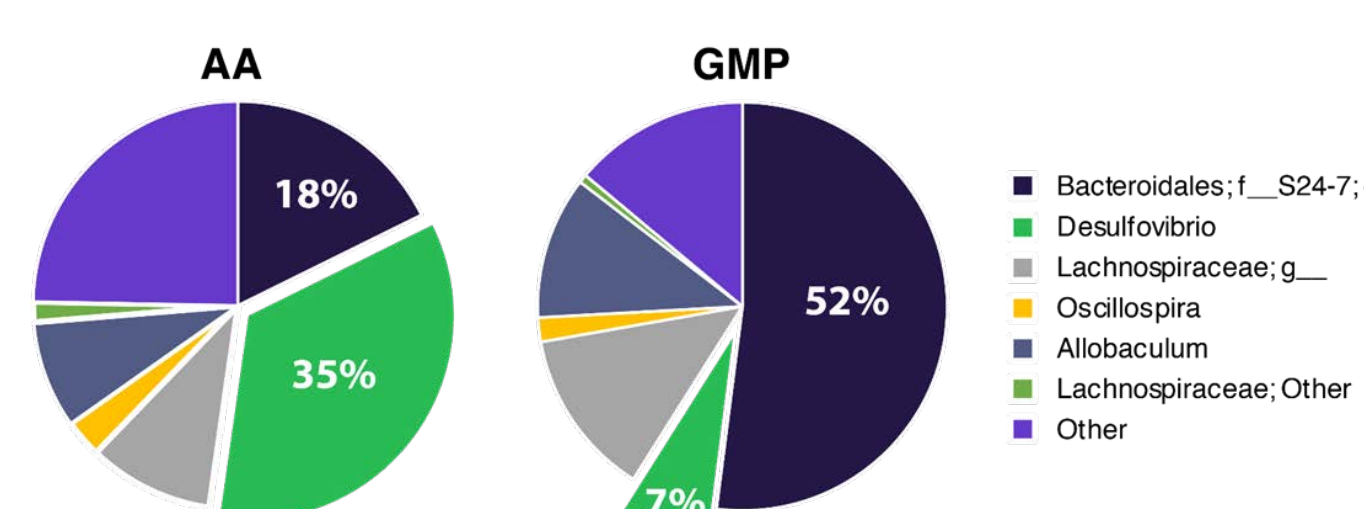
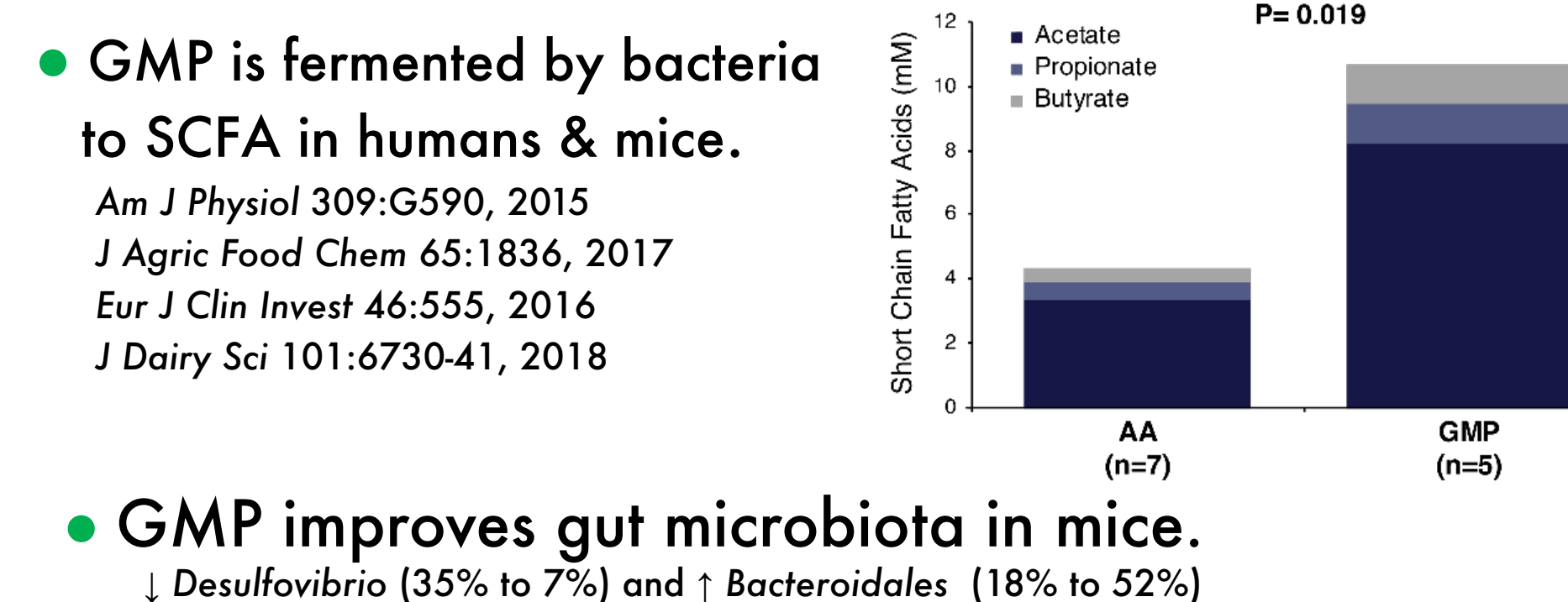
The GMP supplement studied reflects US Patent No. 9,180,16, held by WARF; www.warf.org.

GMP Protein Burns Fat, Boosts Bone Strength in Women

GMP is a prebiotic that promotes healthy bacteria in the gut.



GMP increases short chain fatty acids that decrease inflammation.



Implications and Future Directions

- ▶ New nutritional approaches are needed for the >50 million US women with obesity and/or osteoporosis.
- ▶ Obesity is associated with inflammation & reduced bone mineral density. "Protecting bone health in women is key because when the women lose weight, they often also lose bone density". Karen Hansen MD collaborator
- ▶ This pilot study will provide the data needed to submit a grant to conduct a comprehensive study of obesity and bone health in women fed GMP.
- ▶ The mechanism(s) behind how a GMP supplement may support weight loss and promote bone health are unknown.

One theory is that the prebiotic effects of GMP to nourish healthy gut bacteria leads to reduced inflammation, and greater calcium absorption both of which will protect bone health as women lose weight.

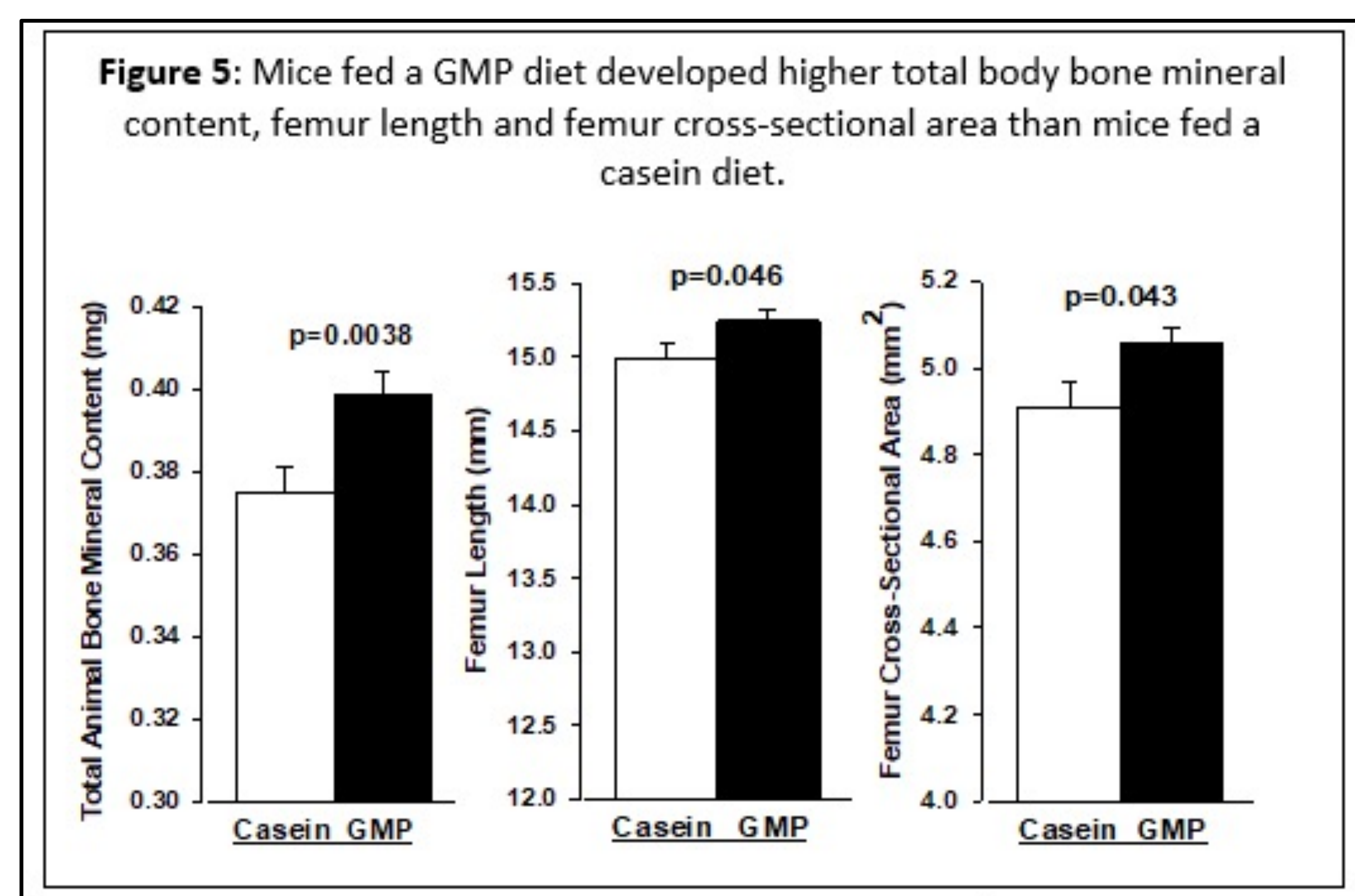
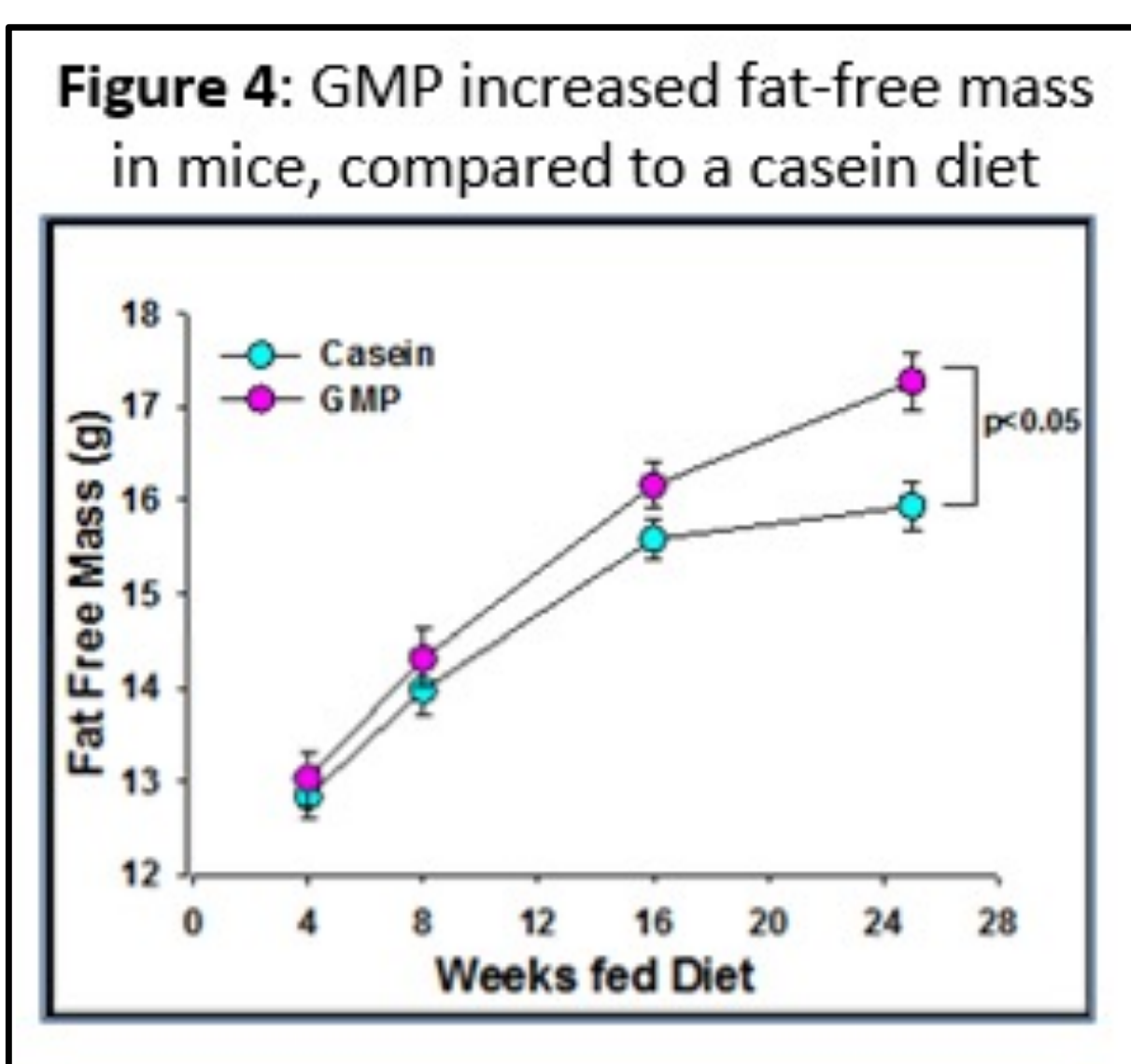
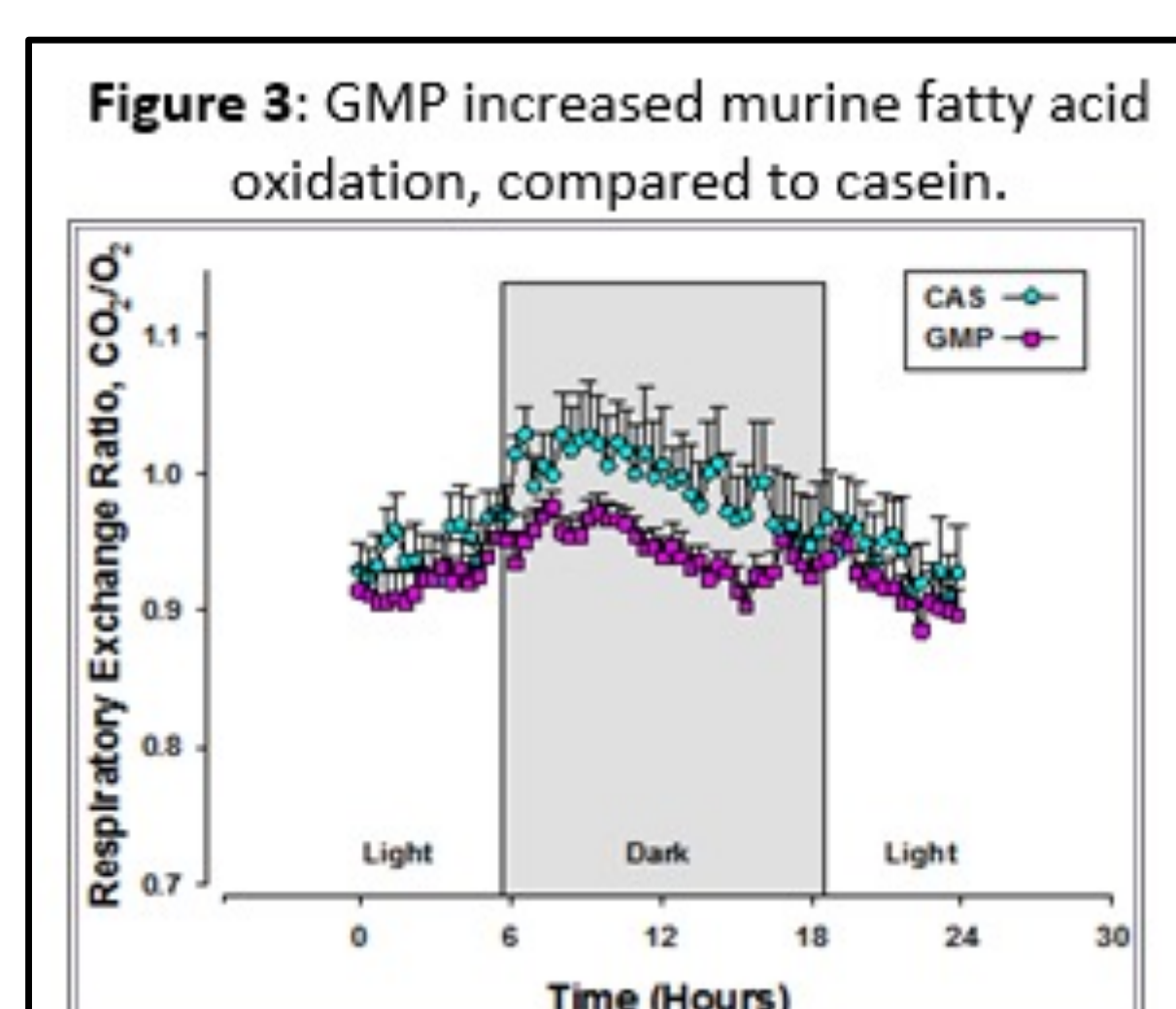
GMP may curb hunger and promote satiety leading to lower food intake by reducing levels of hunger hormones such as ghrelin, as shown in human and mice studies.

Are you interested in our research study to address the question – Can whey protein curb hunger?

- ▶ Volunteers receive free GMP protein supplements and earn up to \$825.
- ▶ You might be eligible if you are:
 - A woman within 10 years of menopause
 - Have a body mass index between 28-35 kg/m²
- ▶ Contact Karen Hansen MD at 608-265-8162 to ask about the "Hunger Study"



A GMP diet increased fat oxidation, lean body (fat-free) mass, bone mineral content, and femur size compared with a casein diet in mice - especially female mice.



Solverson P. ... Ney DM. *Am J Physiol* 302: E885-E895, 2012.
Sawin EA. ...Ney DM. *PLoS ONE* 11(10): e0163234, 2016.

GMP Medical Foods Improve Health for People with Phenylketonuria (PKU)

- ▶ To prevent cognitive impairment, a lifelong low-Phe diet is needed for people with the rare genetic disease PKU. The diet eliminates all high protein foods and requires low-Phe medical food. GMP is unique because it does not contain Phe. We developed GMP medical foods that are now used worldwide to manage PKU as supported by a licensed WARF patent.



GLYTACTIN™ low-Phe Medical Foods