2010 Apr;91(4):966-75.

Low-dose whey protein (WP) microgel improve pre-prandial satiety in people with type 2 diabetes (T2D) and prediabetes

Odd Erik Johansen[1], Lotika Savant[2], Zoltan Magos[3], David Philippe[1], Olivier Aprikian[1]

1: Nestlé Health Science, Switzerland, 2: Nestlé Health Science, Bridgewater, US, 3: Aimmune Therapeutics, UK

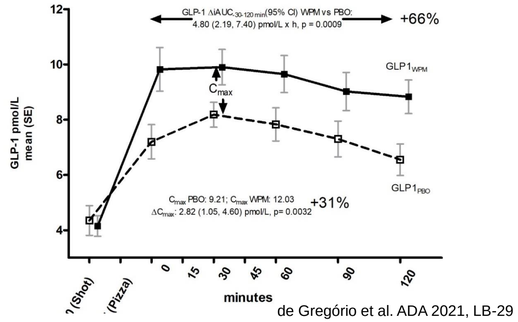
Poster #: 1364

BACKGROUND

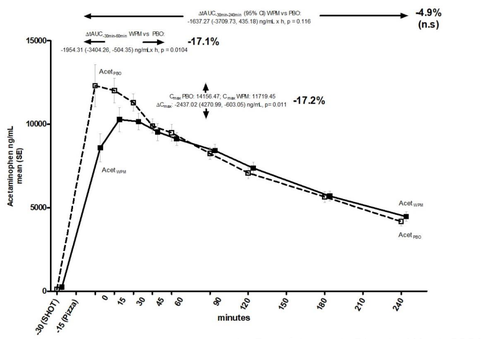
- Whey proteins (WP) are rich in branched chain aminoacids that may stimulate mediators of satiety and delay gastric emptying [GE]), in particular when ingested pre-meal
- Several studies have suggested that these features lead to suppression of appetite

Akhavan et al., Am J Clin Nutr 2010;91: 966–975
Astbury et al. Br J Nutr 2010;104:1858 – 1867
Mollahosseini et al. Clin Nutr ESPEN 2019;20:34-40

- We recently reported that a novel low-dose WP formulation, developed with new micelle-technology [WPM], could allow a smaller dose (10 g) than conventional WP being taken closer to a meal (15 min) to exhibit effect on the anorexigenic hormone GLP-1 (increased by 66%) and on GE (early reduction by 17%) in people with T2D.



de Gregório et al. ADA 2021, LB-29



de Gregório et al. Obesity Week 2021

OBJECTIVE

- To assess the effects of WPM on self-reported satiety using dimensions hungry, satisfied or full in people with prediabetes or T2D

METHODS

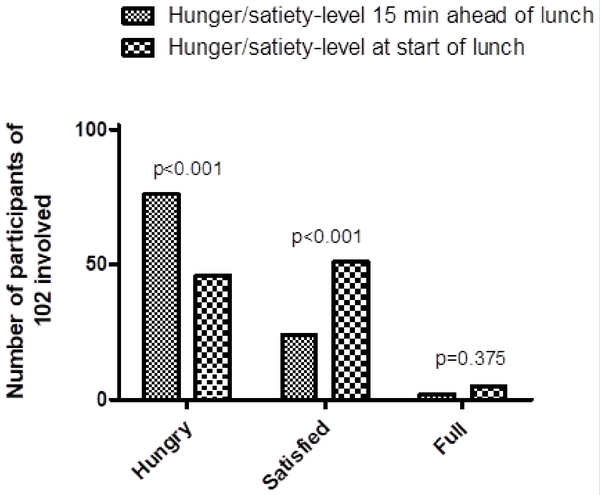
- This was a study conducted as a survey in Wisconsin, Pennsylvania, and New York, US where people with T2D or prediabetes were invited to participate.
- All participants were served a 125 mL low-dose WPM (10g, 40 Cal) pre-meal drink 15 min ahead of a lunch, where participants were asked to rate the effect of WPM on self-reported hunger/fullness before, and 15 min after, the WPM-drink consumption (just ahead of lunch)
- The self-reported sensations were scored on a 1-9 likert scale (1: “Ravenously hungry”, 9: “Stuffed”)
- “Hungry” was defined with scores 1-3, “satisfied” with 4-6, and “full” with 7-9.
- Categorical change, and the overall numbers of participants that improved/reduced their satiety by 1 or 2 units, were analyzed with sign tests.

RESULTS

- A total of 102 (40 males) people, aged 30-70 (71% 50-70 yrs), with T2D (61%), or prediabetes (39%), were involved in the study
- The majority of people diagnosed with T2D had a T2D duration ≥ 3 years (n=44/62)
- None were on insulin, but 9 individuals had received insulin treatment ≥ one year ago

RESULTS (CONT.)

- Overall, n=49/102 were living with their spouse, whereas n=17 lived alone and n=3 with roommates and n=33 with other family.
- A significant higher number of participants reported to be less hungry (76/102 vs 46/102, p<0.001) or more satisfied (45/102 vs 24/102, p< 0.001) 15 min after WPM-consumption (Figure).



- A significantly larger proportion experienced a ≥ 1 unit increase (n=44/50) relative to a comparable negative change (p<0.0001)
- A significantly larger proportion experienced a ≥ 2 unit increase (n=15/17) relative to a comparable negative change (p<0.002)

LIMITATIONS

- Acute study
- Limited number of participants
- Exploratory analysis
- No biomarker analysis

DISCUSSIONS AND CONCLUSION

- We have previously shown that compared to PBO, 10g WPM taken 15 min before a pizza meal, significantly augmented the anorexigenic hormone GLP-1, and induced an early delay in GE; both associated with less feeling of hunger
- At this meeting, we also show that the WPM induced a rapid plasma increase, and a high bioavailibilty, of BCAAs (poster #549) in people with T2D
- These data now suggest that a low-dose, low-caloric, pre-meal WPM also might improve satiety/reduce hunger
- We speculate that the WPM effects on satiety are mediated by effects on GLP-1, GE and BCAAs

Potential conflict of interests and acknowledgements

Author	Conflicts of interest
Odd Erik Johansen, MD, PhD	Employment NHSc
Lotika Savant, PhD	Employment NHSc
Zoltan Magos, PhD	Employment Aimmune, a NHSc company
David Philippe, PhD	Employment NHSc
Olivier Aprikian, PhD	Employment NHSc

The study was funded by Nestlé Health Science (NHSc)

We are indebted to the participants for their commitment to this study

Acknowledgments: This research was funded by Nestlé Health Science