Tessa Porter, Proteins in Sweet Confection Applications (Speaker #6)
Tuesday, April 14, 2015 9:00 a.m.

Questions

1. **Does the refining and milling process as practiced in chocolate making have an effect on protein quality, e.g. chocolate and hazelnuts milled to 30 microns/milled to 12 microns?**

No, size of the particle does not change the amino acid composition of the protein. As long as nothing is extracted from the finely milled protein, the protein quality would remain the same.

2. **What are some of the manufacturing challenges when using added levels of protein in gummies?**

Aeration, clumping, precipitation, burn-on, hardening, etc. can all occur in any product depending on the manufacturing process and the protein used. There is no one-way-fits-all approach.

3. **Are consumers aware of PDCAAS/DIAAS and are they looking for that information on product labels?**

Within the general consumer market, PDCAAS and DIAAS are not as well-known as the simple importance of protein as a macronutrient alone. Protein quality is not currently clearly explained on nutritional facts panels and is more widely understood by health enthusiasts and athletes.

4. **Gummy B has a more muted flavor. Is this protein flavor binding?**

Yes. Increased protein content can bind flavors more and may continue to mute flavors over time. Protein source and the amount of processing on the protein can strongly affect flavor. Whey and soy proteins have a low impact on flavor, whereas pulse proteins and fish proteins can attribute stronger flavors. Also, hydrolyzed proteins or individual amino acid blends can provide a bitter or metallic flavor that is difficult to mask.

5. **How does normal exercise change protein requirement? Will exercise be more or less important in older people than added protein to prevent sarcopenia?**

Normal exercise of 30 minutes of activity per day does not significantly change the protein requirement for healthy adults. Of course, any concerns of this sort should be discussed with a doctor. Likewise, exercise and protein intake are both important in the prevention of sarcopenia. Consuming more protein will not necessarily account for inactivity, and added exercise will not account for low protein intake. As bodies age differently, it is recommended to discuss this with a doctor.

6. **Might the confectionery industry receive push-back for trying to incorporate protein (considered "healthy") into confections which are generally labeled as treats for indulgence (not as healthy)?**

Yes. If protein is added to make specific health claims, or to position the confectionery product

as something more than a confectionery product, there may be push back in reference to 21 CFR 104.20(a). Many of the protein ingredients can be used in confections as a common ingredient and should not be used to make health claims or disguise that the product is a confection in order to position it as "healthy."

7. Do de-natured proteins still contribute to their metabolic effectiveness?

The short answer to this is yes, denaturation of dietary proteins does not break down the primary structure of the protein which is the arrangement of amino acids. The amino acids are what are essentially being used by the body. The longer answer is that it can depend on the metabolic process taking place. By unfolding the quaternary, tertiary, and/or secondary structures, the protein may be more bioavailable due to the simplicity of arrangement, but may also not be as effective in interacting with enzymes, or may not interact with insulin as well.

8. Are the protein amounts in the USDA Handbook (#9?) adjusted already for protein quality as you noted as required for nutritional labeling? Which adjustment do they use?

The information on protein content in nuts as referenced to the USDA Food and Nutrition Information Center in this presentation was not adjusted for protein content. Protein quality does not change the total gram weight of protein per serving, but does adjust the %DV.

9. Do fish proteins have or impart any flavors?

Yes. Most proteins will affect flavor in some way whether it is contributing flavor or muting added flavors. Fish proteins in particular are known to impart stronger flavors than other available proteins, but processing is constantly improving to decrease the impact on flavor.

10. Is MPS an issue if the consumer is not an extreme athlete?

Yes. MPS takes place in everyone's bodies even if they are not extreme athletes. Maintenance of current lean muscle requires MPS to repair and replace muscle as the body tries to maintain overall homeostasis.

11. Are there websites that can help you calculate daily protein needs? Do they include protein types?

Many such websites exist to calculate daily protein needs, but most do not include protein types unless they are marketing for a specific protein product or ingredient. Unfortunately there is not one overall "best" calculation website that is agreed upon by doctors or nutrition professionals.

12. What about timing of protein consumption is important?

Consuming protein 30 minutes prior to exercise or 30 minutes after exercise will trigger muscle protein synthesis faster to aid in the growth and repair of lean muscle tissue. Research has also been conducted to show that consuming high levels of protein a few times throughout the day is more beneficial than continuously consuming low to moderate levels of protein throughout the day. (Layman. Nutr & Metab 6:12, 2009)

13. Can you combine proteins to make a complete protein label, e.g. gelatin and tryptophan?

This is not currently allowed by the FDA.

14. Do you have any information on how heating, as in many confectionery applications, affect PDCAAS?

Heating does not change the amino acid composition of the protein and PDCAAS is a measurement of the essential amino acid content and adjusted for the digestibility of those individual essential amino acids. The total score is based upon the limiting amino acid. Therefore, unless the heat changes the digestibility of a specific amino acid, it will not change the PDCAAS.