

## HUMAN NUTRITION

**Title:** Ounce-Equivalents” in the Protein Foods Group: Benefits of Quality Protein, **NPB #17-001**

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### **Scientific Abstract:**

**Background:** The USDA Dietary Guidelines for Americans (DGAs) Committee published “ounce equivalents” guidelines for the protein foods group, stating that 1 ounce of pork (meat) is equivalent to 2 oz of tofu or 1 oz of mixed nuts. The inequities of the “ounce equivalents” are glaring when considering both the caloric intake and the protein quality differences between animal and plant protein sources. The DGAs do not take this into account, nor the importance of the amount and profile of EAAs in individual proteins. The purpose of this study was to test the impact of differing amounts of protein in the ounce equivalents on the accumulation of body protein.

**Objective:** The objective of this project was to compare the gain in body protein, the principal benefit of protein nutrition, following the ingestion of ounce equivalents of pork loin, tofu, and mixed nuts.

**Design:** We measured the status of muscle and body protein before and after ingestion of the ounce equivalents of pork loin, tofu, and mixed nuts. We also measured the effects of these foods on blood EAA levels, since this is the primary basis for eating protein.

**Results:** Ingestion of pork resulted in a significant increase in peripheral EAA, and in turn, a greater net protein balance. Greater net protein balance with pork was the result of both increased protein synthesis and decreased protein breakdown. Tofu also resulted in a significant improvement in net balance that was greater than mixed nuts, but not as substantial as pork. Like pork, the improvement in net balance with tofu was due to an increase in protein synthesis, but a lesser decrease in protein breakdown. Plasma EAA concentrations were greatest with pork, followed by tofu and mixed nuts. There were no differences in muscle protein synthesis, most likely due to the small amount of protein intake.

**Conclusion:** The “ounce equivalents” proteins in the DGA guidelines were not equivalent in terms of metabolic responses or plasma EAAs concentrations.

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These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

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