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### Density and value of nutrients in plant-based food products when compared with traditional animal-based food products

In recent years, consumers are becoming more diverse when choosing foods to consume. Specifically, there is an increase around the world in the population and percentage of people who choose to consume diets without or limited in animal-derived foods. Utilization of non-meat foods as a complete source of protein, vitamins, and minerals warrants careful consideration. This research focused on 1) comparing nutrient density, nutritional value, and cost of nutrients of meat products and non-meat foods high in protein and 2) comparing nutrient density, nutritional value, and cost of nutrients of dairy milk and plant-based milk alternatives. Twenty-five meat products (beef, pork, lamb, and poultry), six fish products, and eighteen non-meat foods were compared for nutrient composition. Seven dairy-derived milks and six plant-based milk beverages were compared for nutrient composition. Nutrient composition information was used to assign value based on nutrient density. Nutrient cost was expressed in nutrients available per US dollar and prices were assessed from the USDA economic research service and the USDA agricultural marketing service when available,

and with a marketplace assessment when information was unavailable otherwise. Energy, protein, amino acid composition, total fat, saturated fat, cholesterol, vitamin B12, sodium, phosphorus, iron, and zinc content in protein-rich foods and milk beverages were analyzed for nutrient density and value. Individual comparisons for the cost of nutrients was generated from this dataset that will enable further research and categorization of high protein foods. Careful consideration needs to be made when replacing meat in the diet with non-meat foods, because most non-meat foods contain only 20 – 60% total protein density on an equal (raw, unprepared) serving size basis. Likewise, consideration needs to be made when replacing dairy milk with plant-based milk alternatives, as plant-based milk alternatives can range from 5 to 70% of the protein density of whole cow milk.

### Biography

Benjamin M Bohrer is a Meat Scientist with training and expertise in animal and food sciences. He recently completed his graduate education in animal sciences at the University of Illinois with a focus on meat science and muscle biology and began his career as an Assistant Professor in Food Sciences at the University of Guelph. Much of his previous research has been completed on the impacts of on-farm production practices on muscle development, carcass characteristics, fresh meat quality, and processed products of pork, beef, and poultry.

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