RESEARCH ABSTRACT

HUMAN NUTRITION

Title: Nutrient Profile Analysis of Pork and Alternative Protein Sources – **NPB #18-188**

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Scientific Abstract

Although animal proteins have been the primary protein source in human diet for decades, plant-based proteins are gaining popularity in the past few years. However, the nutritional composition and the environmental impact of these products are not clearly understood. Therefore, the objectives of the current study were to evaluate the nutritional composition and to perform a life cycle assessment (LCA) of Morning Star Farms Spicy Black Bean Burger (VB), Beyond Meat's Beyond Burger (BB), Impossible Food's Impossible Burger (IB), boneless center cut pork chops (PC), and 80% lean 20% fat ground pork (GP). The Association of Official Analytical Chemist (AOAC) methods were utilized for the nutritional analyses. The LCA was designed to evaluate ingredients/production, processing, packaging, transport, retail, cooking, and consumption to determine the water, energy, and land used to produce 1 kg of the product along with CO_2 generated from 1kg of production. The PC contained the highest ($P < 0.05$) amount protein and essential amino acids among the products tested. However, the plant-based products had higher ($P < 0.05$) amounts of sodium and iron. When evaluating

warming potential and land occupation. Feed production for swine was the most significant contributor to the impact, whereas, for the meatless alternatives, production of ingredients was the largest contributor. Unlike other plant-based patties, the IB consumption had a high energy demand, especially electricity consumption, during manufacturing stage. Nutritional profile analysis using the NRF15.3 or NRF9.3 system (inclusion of 15 or 9 nutrients to be encouraged and 3 nutrients to be discouraged in diets system) yielded conflicting results. The NRF15.3 scores indicated that pork products had higher nutritional value, whereas NRF9.3 scores indicated that pork had lower scores compared to BB and VB.