TRACK: ADVANCING FOOD SECURITY, NUTRITION, AND POST-HARVEST TECHNOLOGIES

Development of instant Biriyani Full Meal Pack as Meal for Ready to Eat (MRE)

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Instant food products are convenient ready-made items specifically designed to cater to the fast-paced lifestyles of today. These products, including instant noodles, spaghetti, soups, ready-to-eat cereals, and pre-cooked rice, provide time-efficient meal solutions for those seeking quick options. Hence, a series of experiments was conducted to develop an instant biryani full meal using basmati long-grain rice, infused with flavour. The study aimed to evaluate the effects of different dehydration methods, water: rice ratio and packaging material on organoleptic and physicochemical properties. In the first experiment, the rice was conventionally cooked and then subjected to different dehydration treatments (sun drying, oven drying, and roasting) to produce instant rice. The spices were dehydrated using similar methods. In the second experiment, three different water- to-rice ratios (1:1, 1:1.25, 1:1.5) were tested with the instant biryani mix to identify the best rehydration method. Experiment three aimed to determine the best packaging material for the instant biryani mix with an emphasis on shelf life with five treatments (T1: HDPE with vacuum and freezing, T2: HDPE with vacuum, T3: LAP, T4: HDPE, and T5: LDPE). Based on the results, 1:1.5 water-to-rice ratio was selected as the optimal rehydration method, providing the closest resemblance to authentic biryani and achieving high consumer satisfaction. The results indicated a significant difference between tested packaging methods ($p<0.05$), and T4 (HDPE packaging) emerged as the most effective. Based on the experiments, considering cost, the sun-drying method combined with HDPE packaging was found to perform better than other methods. Nutritional analysis of the meal revealed that the selected process yielded a product containing 72% carbohydrates, 15.2% protein, 5.21% fat, 2.64% salt, 4.26% ash, and provided 398.89 Kcal per 100 g serving.

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