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A REVIEW THE EFFECTS OF CARRAGEENAN ON CHARACTERISTICS OF MEAT PRODUCTS

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Introduction:several basic approach can be used to successfully reduce the fat in processed meats. It seemthe simple reduction of fat would be the most efficient method of producing low-fat comminuted products. However, the palatability of products is directly related to fat content. Fat provides succulence, texture, and flavour, all of which are altered if fat is removed, resulting in meat products with a rubbery, dry texture. Fat reduction in finely comminuted meat results in products of less desirable texture due to significant changes in hardness.carbohydrate gums are commonly used by the food industry as texture modifying agents in many different types of products.Hydrocolloids, especially carrageenans, were also often utilised as fat replacers in modifying both texture and sensory attributes of meat products. Carrageenan is one of these gums that because of its good gelling property in meat products, reduces fat in the products including sausage and frankfurters and improvesmoisture content, purge loss, cutting ability, and cooking efficiency (3).
k-carrageenan is charactezised by its repeating disaccharide units of 3- linked β- D- galactose 4- sulfate and 4- linked 3،6- anhydro- α- D- galactose. K-carrageenan is capable of forming thermo- reversible gels at low concentration. The mechanism of gelatin involves coli-helix transition of the k- carrageenan molecules.K-carrageenan is a liner sulphated polysaccharide, extracted from red alge. It is widely used in the food industry in a broad range of applications because of its waterbinding, thickening and gelling properties. In the meat industry, carrageenan is used as a gelling agent in canned meats and petfoods and allows an important reduction in fat content in comminuted meat products like frankfurter. In cooked sliced meats carrageenan is used to improve moisture retention. Cooking yields, slicing properties, mouthfeel and juiciness. In these products, the application of carrageenan is based on its low viscosity when dispersed in the brine to be injected in the meat, its hydration during the cooking of the ham and its gelation upon cooling (2).
Materials and methods: Six types of sausage with different percentage of water (30%, 40%) and carrageenan gum (0.5% ,1% ,1.5%) were produced. Measurement of weight loss caused by purge loss in vacuum packaging: Packages containing 20 g of the productwith certain thickness which were stored in 0-4 degree centigrade for 4 weeks , were weighted. Then they were opened and both the packages and the products inside were dried using dry paper towel and weighted again. The difference between these two weights is the weight of removed water of the products and the weight loss was measured by dividing the weight of removed water of the product to the total weight.

Resuilt and discusion: Analysis of variance shows a significant difference in purge loss rate in vacuum packaging of various formulations at the five percent probability level . The object was to minimize weight loss caused by purge loss in vacuum packaging. The results showed that purge loss in samples was in a range between 2.10-4.23%.The highest purge loss rate about 23.4% was for the formulation with 0.5% kappa-carrageenan and 40%water and the lowest purge loss rate about 2.10% was for the formulation with 1.5% carrageenan and 30% water. The object was to minimize weight loss caused by purge loss in vacuum packaging. The optimal condition was determined by adding 1.5% carrageenan and 30% water and having 2.10% weight loss.
Replacing fat with water in low- fat processed meat product would improve sensory properties and texture while increase cooking damage and purge loss.Adding kappa-carrageenan to the beef rolls at the level of 0/5% to 1% decreases the purge loss of slices packed in the vacuum during refrigerated storage.Reduction of oil would increase weight loss caused by purge loss, and the increase of carrageenan gum and basil seed gum would decrease the loss.
Keywords: carrageenan, low- fat meat products