Addition Of Sweet Potato Powder and Olive Oil as Fat Replacer in Chicken Sausages Coated with Carom Essential Oil

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ABSTRACT

Keywords: Antioxidant, Carom essential oil, Lipid oxidation, Physicochemical analysis, Thiobarbituric acid reactive substance (TBARS) value

INTRODUCTION

The consumption of different meat products has been increasing worldwide. Sausage is a meat-fat-water-spices-and-additives emulsion in which the fat is distributed more or less uniformly in highly hydrated and a continuous protein matrix. Fat is an important component of sausages because it promotes juiciness and tenderness. Because of their high fat content, sausage consumption is associated with a number of diseases, including coronary heart disease, cardiovascular disease, high blood pressure and obesity. Since many consumers are familiar with the risk associated with high animal fat consumption, so the requirement for low-fat meat products is increasing. Sweet potato is widely available and can be used to substitute fat in sausages. Olive oil can also be used to substitute fat and it minimizes the risk of cardiovascular diseases and cancer. Carom essential oil contains gammaterpinene, p-cymene and thymol, in addition, more than 20 trace components (predominately terpenoids). The essential oil of carom has a variety of therapeutic properties, including antioxidant and antimicrobial activity.

OBJECTIVE

This study was conducted to develop low fat chicken sausages by incorporating sweet potato powder and olive oil as fat replacer and evaluating their effect on product's physicochemical and organoleptic properties and shelf life extension by applying carom oil coating.

METHODOLOGY

In this study, low-fat chicken sausages were developed by replacing chicken skin with sweet potato powder and olive oil and coated with carom essential oil according to the treatment plan. In general, sausages can contain up to 30% animal fat. Chicken skin was substituted with 5%, 10%, and 15% sweet potato powder and 5% olive oil. Chitosan was used as a coating with 2% carom essential oil. Chitosan + carom essential oil coating solution was applied to sausage samples. Each sample was dipped in the coating solution for 30 seconds before being allowed to stand for 2 minutes before being dipped again for 30 seconds. The sausages were then allowed to drain before storage for further evaluation which was performed at 7-day interval to evaluate quality of sausages. To evaluate the various attributes, different analysis i.e., physicochemical analysis, pH, texture and color analysis, TBARS, cooking yield, emulsion stability and sensory analysis were performed.

Table1. Treatment plan for the development of chicken sausages.

Treatment	Carom essential oil %	Chicken Skin %	Sweet Potato Powder %	Olive Oil %
T_o	0	30	0	0
T_1	2	20	5	5
T_2	2	15	10	5
T_3	2	10	15	5

RESULTS

According to proximate analysis, T_0 at 0 day contains the highest amount of moisture content i.e., 68.50 and T_3 at 14 day contains the lowest amount of moisture content i.e., 59.51. Crude fat content of T_1 at 0 day was the highest i.e., 14.22 and T_3 at 0 and 7 day was lowest i.e., 10.57. pH was also examined and found that T_0 at day 14 contains the lowest amount of pH i.e., 6.05 and T_0 at day 0 contains the highest amount of pH i.e., 6.36. TBARS value of T_0 at 14 day was highest i.e., 0.46 and T_1 at 0 day was lowest i.e., 0.12. The panelists were asked to rate the color, taste, odor, texture, and overall acceptability of formulated sausages. In term of overall acceptability treatment T_2 (10% sweet potato powder and 5% olive oil) was preferred. Finally, it can be claimed that developed chicken sausages can be labelled as low-fat chicken sausages with lower deterioration by lipid oxidation because of using carom essential oil coating.

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