

Effect of Recipes Ingredients on Quality Attributes of Carp Burgers

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ABSTRACT

This work was planned to investigate the effect of recipes ingredients on Common carp (*Cyprinus carpio*) burgers quality. The minced carp was mixed with recommended recipe ingredients (A) and other one was mixed with Spysi recipe ingredients (B). After that, two batches were formed by burgers machine. Results showed that recipe (B) improved water holding ability in raw burgers samples as compared with other one (A). Changes in chemical composition exception protein content of microwave cooked burgers (A) and (B) were similar. Raw burgers with recipe (B) had high values of total volatile basic nitrogen (TVB-N) (21.7 mg/100g ww); trimethylamine nitrogen (TMA-N) (2.33mg/100g) and low value of thiobarbituric acid (TBA). In addition, Cd level did not detectable in raw fish flesh and its products with different recipes. Raw burgers with recipe (B) had high levels of minerals (Fe, Zn, and Cu) than that with recipe (A). Frying increased levels of Fe, Cu and Mn in burgers with recipe (A) as compared with recipes (B). On the other hand, two recipes led to increase in microbial load in raw burgers. Total plate count (TPC) (49×10^3 cfu/g), thermophilic (50 cfu/g), yeasts and molds (20 cfu/g) were higher in raw burgers with recipe (A) than other one (B) however, enterobacteriaceae count was undetectable. In addition to, both recipes (A and B) improved sensory properties of cooked burgers in particular odor property in case of burgers with recipe (B). In conclusion, this work recommends that ingredients of recipes used had clearly affect quality properties of burgers. Also, recipe (B) had a high ability of water holding capacity, nutritive value and improved sensory characteristics especially odor property of burgers manufactured from common carp compared with recipe (A).

Keywords: fish burger, quality properties, heavy metals, cooking methods.

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INTRODUCTION

Fish is a good source of protein and can be used as an alternative to meat (lamb, pork and chicken), this may be due to fish low cholesterol, optimal protein amount, high digestibility and polyunsaturated fatty acids such as omega-3, essential amino acids and other elements necessary for the maintenance of healthy body (Boran and Kose, 2007 and Adebayo-Tayo *et al.*, 2012). However, fish is a highly perishable commodity that undergoes spoilage as soon as it harvested. Consequently, fish processing has a special concerning in fishing and aquaculture industries. The processing and preservation of fresh fish are of utmost importance since fish is highly susceptible to deterioration immediately after harvest and also to prevent economic losses (Okonta and Ekelemu, 2005; Gupta and Gupta, 2006). Also, the advantage of preservation is to reduce wastage of fresh products, extends the shelf life, develops value added products and to provide convenient preferable forms (Meenakshi *et al.*, 2010). Carps, as freshwater fish species, has been one of the most widely cultured species all over the world due to its fast growth rate, easy cultivation and high feed efficiency ratio. However, carps having intramuscular bones have low consumer preference and hence limited market (Gelman and Benjamin, 1988; Yongkong *et al.*, 2002). Many reports have focused on alternative products from carp mince such as fish burgers, balls, frankfurters and other sausages (Yanar and Fenercioglu, 1999; Siddaiah *et al.*, 2001). Large size silver carp fish for the production of fast fishery products such as fingers, patties, kofta and chips could be utilized. These products had a high nutritional quality as well as good acceptability (El-Sherif and Ibrahim, 2012). In addition, the nutritive value of the investigated products was based on percent of minced fish formula. Therefore, this

work was planned to investigate the effect of recipes ingredients (recommended recipe, A) and (Spysi recipe, B) on burgers quality made from common carp (*Cyprinus carpio*).

MATERIALS AND METHODS

Materials:

Fish samples: Common carp fish (*Cyprinus carpio*) samples (average weight and length were 3.70 kg and 57 cm, respectively) were purchased from Elserw village, Dammatta Governorate during May 2015.

Methods:

Preparation of recipe ingredients: All ingredients used in this study were purchased from local market (Ibrahim *et al.*, 2008). Two recipes ingredients were investigated as follows: recommended recipe (A) composed 9% palm oil, 8% starch, 2.3% Sodium chloride, 2.5% onion, 0.5% garlic, 0.3% Sod. polyphosphate, 0.4% Sod. bicarbonate and 2% spices mixture (42% black pepper, 23% cumin, 18% all spices, 5% coriander, 5% ginger, 2% clove, 2% cardamom, 2% cubeb and 1% red pepper) with 75% fish mince were mixed (Chndrasekhar and Mohite, 1978) and recipe (B) namely prepared Spysi vegetar (9%) with 91% fish mince were mixed.

Technological processes: Fish samples were transported using ice box to Fish Technology and Processing Lab., Elkanater Elkhairia Station for Fish Research, National Institute of Oceanography and Fisheries. Then, they were carefully washed with tap water, filleted, carefully washed again, drained, minced using electric meat mincer with a pore size 3 mm and divided into two batches; first one was mixed with recipe ingredients (A) and other one was mixed with recipe ingredients (B). After that, two batches were

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تأثير مكونات الخلطات الغذائية على جودة بيرجر سمك المبروك العادي

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يهدف هذا البحث الى دراسة تأثير مكونات الخلطات الغذائية على جودة بيرجر سمك المبروك العادي. تم تقييم سمك المبروك و خلطها بنوعين من ال لطا تا ال لطاة الشائعة (أ) وال لطاة اسبابسي (ب) تم تشكيلهما في صورة بيرجر. تم دراسة تأثير بعض طرق الطهي (القلي في زيت عميق والطهي في فرن الميكرو و وف)، كما أجريت بعض معايير الطبيعية والكيميائية والميكروبية الى واصل الصلابة و على تقدير بعض العناصر للمنتجات محل الدراسة وضحت النتائج المتد ل عليهان ال لطاة (ب) حسنت قدرة البيرجر على الاحتفاظ بالماء علا وة على زلصقوي البر وتين مقارنة بعينات ال لطاة (أ). تشابه التركيب الكيميائي غذا البر وتين في منتجات البيرجر ب لطا (أ)، بللطة بالميكرو و وفارتفاع في محتوى المواد النيتروجينية والطيارة (٢٠مجم / ١٠٠جم من الوزن الرطب) وامين ثلاثي ميثيل (٢.٢٣ مجم / ١٠٠جم) بينما ان صفى قيمة حمض الثيوباربيتوريك في عينات بيرجر بال لطاة (ب) مقارنة بال لطاة (أ) سجلت عينات البيرجر ال (ب) تركيزا اعلى لعناصر الحديد والزنك والنحاس مقارنة بعينات ال لطاة (أ) في الزيت الى زيادة مستويات الحديد والنحاس والمنجنيز في منتجات ال لطاة (أ) مقارنة بمنتجات ال لطاة (ب). لطا الممتدة الى ارتفاع الحمل الميكرو و وى خاصة في عينات البيرجر بال لطاة (أ) حيث سجل المحتوى الكلي للبكتيريا ١٠^٣ خلية / جرام عينة، والبكتيريا المحبة للحرارة (٥٠ خلية / جرام) حسنت كلا من ال لطا (أ)، بجمع ال - انص الحسية للمنتجات خاصة الرائحة في منتجات ال لطا (ب) على ماسبق فان الدراسة توصي بأن مكونات ال لطا الغذائية لها تأثير واضح على معايير جودة البيرجر، كما توصي باست دام ال لطا الجاهزة (بلل) لها من قدرة عالية على الاحتفاظ بالماء وارتفاع القيمة الغذائية حيوت ال واصل الحسية للبيرجر الم نغ من سمك المبروك العادي.