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## Amino acid composition and sensory quality of fish onion rings made from carp (*Cyprinus carpio*)

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**Abstract** In this study, it was aimed to product of fish onion rings with carp (*Cyprinus carpio*). Based on the onion rings dough, fish meat, onion, corn flour, wheat flour salt, and cold water were added and stirred until a homogenous mixture with mixer was obtained. After the homogenous mixture was formed as the shape of the onion ring by the dough shaping apparatus, the fish onion rings was applied then the freezing form for at least 2 days. Amino acid and sensory quality of the samples that were acquired in the study were determined. Analysis of amino acids showed that Isoleucine, Leucine, Arginine, Lysine, Phenylalanine, Proline and Threonine decreased present respectively. The general acceptability score of fish onion rings was perfectly approved of by panelists.

**Keywords** Fish onion rings, *Cyprinus carpio*, fast food, chemical composition, sensory quality, Amino acid

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### Introduction

Battered and breaded foods, such as fish, sea foods, vegetables, and fruits are very common of consumer diet in the worlds [1]. Coated onion rings are products lovingly consumed by consumers [2]. The use of breading and batter on onion rings in 1988 year was presumed at over 22 million kg [2]. The current availability of both low cost and high energy fast-foods (Snack foods) sold by restaurants food shops leads to increase total energy intake among low income consumer [3]. The nutritive quality of fish very valuable for our vital activities [4-5]. Therefore, if snacks are eaten often between meals this might result in high energy intake. It is considered that it would be worth to enrich these products enriched with fish meat since they are consumed in large proportions today [6]. The most important increase of fish consumption to is take place with provide of both manufactured and processed fish products [7]. It is important to present in different ways of customer expectations of the nutritional value of fish meat [8]. Worldwide, infinite onion ring products have been developed [9-10] and continue currently to be developed. But, there are no much work related of enrichment with fish meat of onion rings.

This study aims to determine the effect of fish meat on sensory characteristics and amino acid composition of prepared fish onion rings in order to new product development of fish onion rings containing meat of *Cyprinus carpio*.

### Material and Methods

Within this study, *Cyprinus carpio* with have economic value were supplied from fisheries in the Keban Dam Lake in Pertek area available. Fishes were moved with ice in polyurethane carriage boxes in them to the laboratory in the Pertek Vocational College. Then, fishes were processed in the same day. After fillets were prepared. They were rinsed with 5% salt-water (cold water). Then, they were ground in blender for 10 minutes.

**Creation of fish onion rings:** Fish onion rings were produced according to the method reported by Karaton Kuzgun [8]. It is in down as ordered of fish onion rings process:



1. Supplied fish and the fish were made into fillets.
2. Fish filets were kept in 5% cold salt solution for 10 min, which was made into mince.
3. The mixture was added minced onion (minced fish meat, wheat flour, corn flour, salt, water).
4. The mixture was mixed using a mixer until a homogenous mixture was obtained
5. After the mixture was formed as the shape of the onion ring by the dough shaping apparatus. The fishy onion rings was applied in the freezing form for at least 2 days.
6. Frozen fish onion rings were covered first flour. Lastly panko or breadcrumbs and followed by egg.
7. Cooking in the hot oil (1-1.5minutes at 150-190 ° C).

The ingredients of fish onion rings are presented in Table 1.

	Minced Fish meat(g)	Minced Onion(g)	Wheat Flour(g)	Corn Flour(g)	Salt (g)	Water (mL)
<b>Fish Onion Rings</b>	180	350	180	50	20	220

### Amino acid Analysis

In determining the free amino acid composition of the samples, the HPLC method described by Aristoy and Toldra [11] with Antoine et al. [12] was used. Samples were sent to Erciyes University ARGAE laboratory by cold chain.

### Sensory Analysis

Five experienced panelists were academic staff trained in sensory descriptors for the samples were evaluated in terms of appearance, odor, color, flavor, crispiness and general acceptability of the fish onion rings (9-Very Good to 1—Very Bad) [13].

### Results and Discussions

Amount of amino acids are aromatic formations responsible for taste [16]. The amino acid content of onion rings are presented in Table 1. The amount of Isoleucine, leucine, arginine, Lysine, phenylalanine, proline and threonine decreased while the amount of the all amino acids remained in the same level after onion rings process. Berik et al [14] announced that amino acid analyses showed that the highest amounts of lysine, glutamic acid and leucine the essential amino acids for humans were founding in fish meat and fingers. The findings of this study show similarity with our study. Additionally, another in studied noticed that Karaton Kuzgun [8] announced that amino acid analyses showed that the amount of arginine, Isoleucine, phenylalanine, Lysine, prolineleucine and threonine decreased while the amount of the Asparagine, Histidine and Methionine remained in the same level after rainbow trout onion rings process. The findings of this study show similarity with our study, although fish meat is different. In our study, the total amount of amino acids was 28.144 g/100g in fish meat, 6.877g/100g in fish onion ring dough and 1.167g/100g in fried fish onion rings (Table 2.).

**Table 2:** The amino acid content of onion rings prepared with Carp meat g/100g

	C	D	O
	<b>Non-Essential Amino Acids</b>		
<b>Asparticacid</b>	1.645	0.090	0.136
<b>Serine</b>	0.324	0.104	0.061
<b>Asparagine</b>	1.122	0.104	0.16
<b>Glutamine</b>	0.066	0.001	0.001
<b>Glycine</b>	0.000	5.730	0.00
<b>Alanine</b>	0.386	0.003	0.054
<b>Tyrosine</b>	0.260	0.019	0.107
<b>Cystine</b>	0.013	0.001	0.016
	<b>Essential Amino Acids</b>		



<b>Threonine</b>	3.45	0.077	0.247
<b>Histidine</b>	0.727	0.002	0.032
<b>Arginine</b>	1.370	0.059	0.047
<b>Valine</b>	3.017	0.001	0.001
<b>Methionine</b>	5.030	0.000	0.013
<b>Phenylalanine</b>	0.589	0.014	0.000
<b>Isoleucine</b>	11.635	1.147	1.167
<b>Leucine</b>	0.112	0.006	0.016
<b>Lysine</b>	4.290	0.117	0.222
<b>Total amino acids</b>	28.144	6.877	1.167

C: Carp; D: Dough; O: Onion Rings

### Sensory evaluation

In the sensory quality point of sample carp onion rings were presented in Figure 1. In the experimental study determined conducted on onion rings that general acceptability, flavor, odor, color, and crispiness score of the onion rings as  $8.75 \pm 0.43$ ,  $8.75 \pm 0.43$ ,  $8.25 \pm 0.43$ ,  $9.00 \pm 0.00$  and  $8.75 \pm 0.43$  point, respectively. Karaton Kuzgun [8] determined that it was determined that our sensory values were less than her sensory values in the onion rights study performed on trout at the same rates.

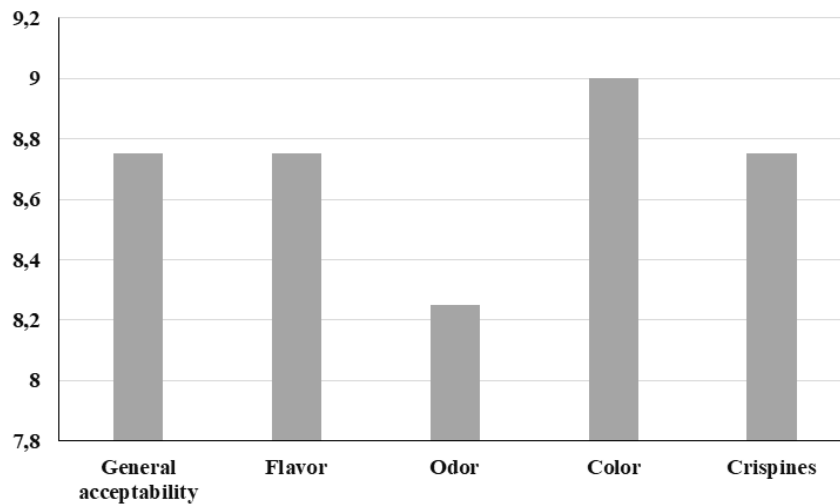


Figure 1: Sensorial changes of the fish onion rings prepared with Carp meat

### Conclusions

As a result, it has been determined as carp meat can be acceptable for onion rings produce suitable for consumer tastes. While producing fish meat onion rings, to be as a decrease was observed in amino acid level in general after cooking. When seafood products are turned into snacks foods, more consumer can be liked fish consumption.

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