MAKARNALIK VE EKMEKLİK BUĞDAY BULGURLARININ ÇİĞ KÖFTE ÜRETİMİNDE KULLANIM OLANAKLARININ ARAŞTIRILMASI

INVESTIGATION OF THE USE POTENTIAL OF DURUM AND BREAD WHEAT BULGURS IN ÇIĞ KÖFTE PRODUCTION

Şeyma TOPÇU

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ÖZET

Çiğ köfte, bulgurdan elde edilen, köklü bir geçmişe sahip ve ülkemizde severek tüketilen bir gıda maddesidir. Geleneksel olarak evlerde elle yoğrularak üretilen çiğ köfte, günümüzde artan nüfusla birlikte talebi karşılayabilmek adına gıda işletmelerinde makinelerle yoğurulmaktadır. Çiğ köfte üretiminde genellikle, işleme ve yoğurmaya daha elverişli olan ve su absorbe etme kapasitesi daha yüksek olan ekmeklik buğdaylardan üretilen bulgurlar tercih edilmektedir. Ancak, protein, karotenoid ve mineral madde gibi besin değerleri açısından daha zengin olan makarnalık buğdaylardan üretilen bulgurlarda yüksek tercih edilebilirliğe sahiptir.

Bu çalışmada, Sakarya ilinde üretilen ekmeklik ve makarnalık buğday çeşitlerinden elde edilen bulgurların besin kalitesi üzerindeki etkileri ve son ürün olarak çiğ köfteye uygunlukları araştırılmış; elde edilen sonuçlar ticari bir bulgur ile karşılaştırılmıştır. İki farklı partikül boyutunda (0,5 mm elek üstü ve 1,6 mm elek üstü) bulgur kullanılarak, iki farklı karıştırma hızı (1 devir ve 3 devir) ile üretilen çiğ köfte örneklerinin besin değerleri karşılaştırılmıştır.

Araştırmada, bulgurlarda antioksidan ve fenolik madde miktarı açısından buğday çeşitleri arasında fark tespit edilmezken, son ürün olan çiğ köftede bu çeşitler arasında fark gözlemlenmiştir. Sarı renk pigmenti açısından ise bulgurlar arasında fark bulunmuş (6,81-22,43 ppm makarnalık buğday, 15,43-22,93 ppm ekmeklik buğday), ancak çiğ köfte ürünlerinde istatistiksel olarak anlamlı bir fark tespit edilmemiştir. Çözünür, çözünmez ve toplam diyet lifi miktarları açısından bulgur örneklerinde ekmeklik buğday daha yüksek değerlere sahipken (2,15-3,17 %w/w, 8,45-9,31 %w/w, 10,60-12,49 %w/w), çiğ köfte ürünlerinde makarnalık buğdaydan elde edilen bulgurların daha yüksek değerlere (2,20 – 5,80 %w/w, 20,12 – 22,65 %w/w, 20,87-25,37%w/w) sahip olduğu belirlenmiştir. Ayrıca, bulgurda partikül boyutu küçüldükçe bu değerlerin istatistiksel olarak anlamlı bir şekilde arttığı görülmüştür.

Karıştırma hızına ilişkin bulgularda ise hız arttıkça antioksidan madde miktarı, sarı renk pigmenti ve çözünür diyet lifi değerlerinin arttığı; düşük hızda ise fenolik madde miktarı ve çözünmez diyet lifi değerlerinin daha yüksek olduğu tespit edilmiştir. Çalışmanın sonuçlarına göre, ekmeklik ve makarnalık çeşitlerin ticari bulgurlardan daha yüksek değerlere sahip olduğu ve makarnalık buğdaydan elde edilen bulgurların ticari üretimde değerlendirilme potansiyeline sahip olduğu değerlendirilmiştir.

Anahtar Kelimeler: Çiğ Köfte, Bulgur, Kalite

ABSTRACT

Çiğ köfte is a traditional food product made from bulgur, with a long history and widespread popularity in Turkey. Traditionally, it was prepared at home by hand kneading, but with the increasing population, its production has shifted to food businesses using machines to meet the growing demand. In çiğ köfte production, bulgur made from bread wheat is generally preferred due to its better processing and kneading properties and higher water absorption capacity. However, bulgur made from durum wheat, which is richer in protein, carotenoids, and minerals, also has significant potential for preference.

This study investigated the effects of bulgur obtained from bread and durum wheat varieties grown in Sakarya province on nutritional quality and their suitability for çiğ köfte production. The results were compared with those of a commercially produced bulgur. Çiğ köfte samples were prepared using bulgur with two different particle sizes (0.5 mm sieve and 1.6 mm sieve) and two different mixing speeds (1 rpm and 3 rpm), and their nutritional values were compared.

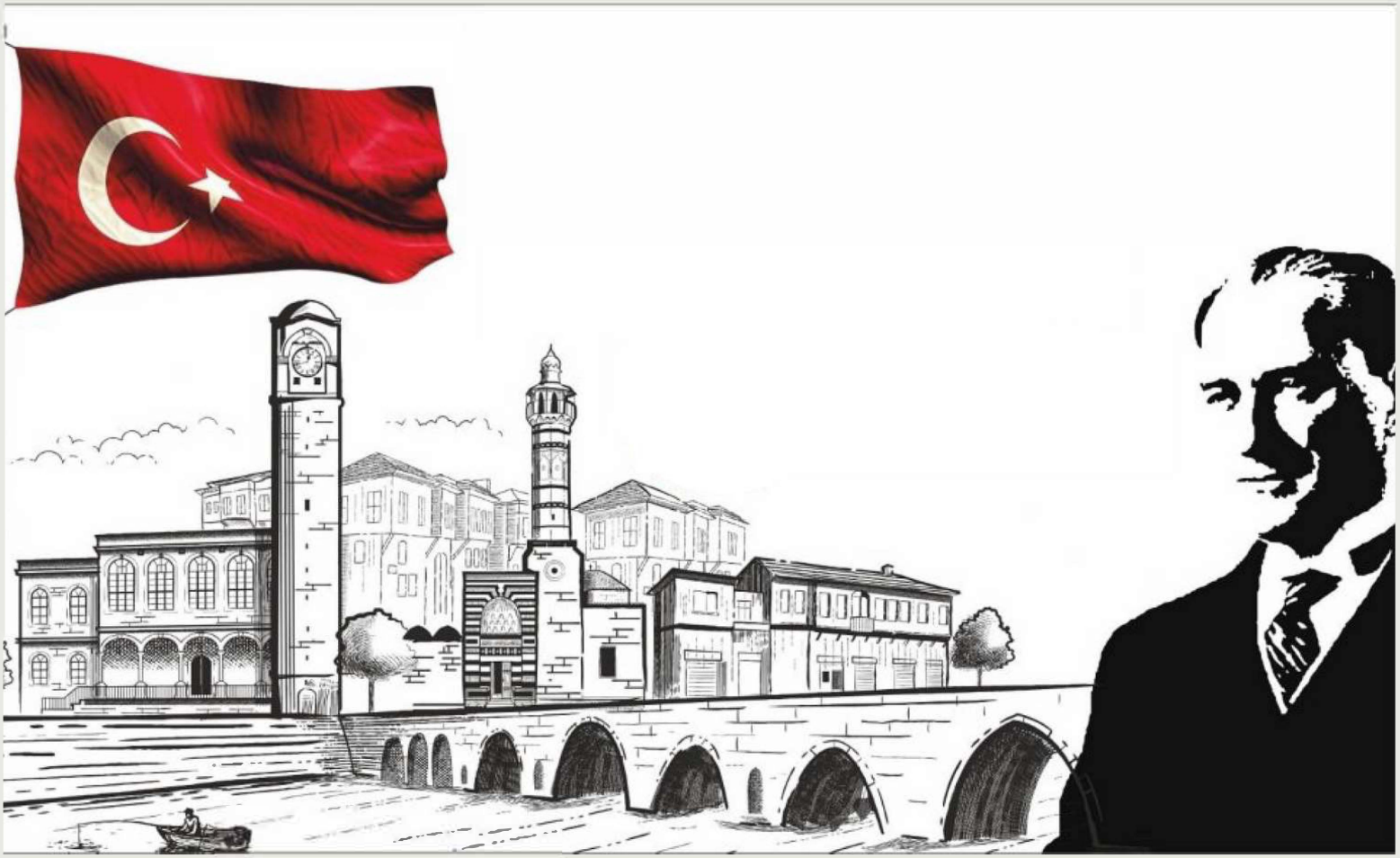
The study found no significant differences in the antioxidant and phenolic compound content of bulgur between the wheat varieties; however, differences were observed in the final çiğ köfte product. For yellow pigment content, differences were found among bulgur samples (6.81–22.43 ppm for durum wheat and 15.43–22.93 ppm for bread wheat), but no statistically significant differences were noted in çiğ köfte samples. In terms of soluble, insoluble, and total dietary fiber content, bulgur made from bread wheat had higher values (2.15–3.17% w/w, 8.45–9.31% w/w, and 10.60–12.49% w/w, respectively), while çiğ köfte made with bulgur from durum wheat showed higher values (2.20–5.80% w/w, 20.12–22.65% w/w, and 20.87–25.37% w/w, respectively). Additionally, as the particle size of the bulgur decreased, these values statistically increased.

Regarding mixing speed, higher speeds resulted in increased antioxidant content, yellow pigment levels, and soluble dietary fiber, while lower speeds yielded higher phenolic compound levels and insoluble dietary fiber.

The study concluded that both bread and durum wheat bulgur varieties have higher nutritional values than commercially produced bulgur. Durum wheat bulgur, in particular, shows strong potential for commercial production in çiğ köfte manufacturing.

Keywords: Çiğ Köfte, Bulgur, Quality.

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ONLINE PRESENTATIONS / 04.01.2025

ANKARA LOCAL TIME - 10 00 : 12 00
HALL-4, SESSION-1

Meeting ID: 833 1287 1999
Passcode: 050505

HEAD OF SESSION: Assoc. Prof. Dr. Yaşar KARADUMAN

AUTHORS	AFFILIATION	TOPIC TITLE
Şeyma TOPÇU Assoc. Prof. Dr. Yaşar KARADUMAN	Eskişehir Osmangazi University (Türkiye)	INVESTIGATION OF THE USE POTENTIAL OF DURUM AND BREAD WHEAT BULGURS IN ÇİĞ KÖFTE PRODUCTION
Nezaket TUTGUN ÖNGÜN Assoc. Prof. Dr. Yaşar KARADUMAN Dr. Arzu AKIN Nuriye GÜNEŞ Prof. Dr. Tamer AKAN	AL-SAN Gıda Ticaret Sanayi A.Ş. (Türkiye) Eskişehir Osmangazi University (Türkiye) Republic Of Türkiye Ministry of Agriculture and Forestry Transitional Zone Agricultural Research Institute (Türkiye) Eskişehir Osmangazi University (Türkiye) Eskişehir Osmangazi University (Türkiye)	EVALUATION OF THE EFFECTIVENESS OF COLD ATMOSPHERIC PLASMA TREATMENT ON IMPROVEMENT OF GLUTEN QUALITY OF WEAK BREAD FLOUR
Kübra KAYHAN Assoc. Prof. Dr. Yaşar KARADUMAN Prof. Dr. Tamer AKAN	Eskişehir Osmangazi University (Türkiye	THE EFFECT OF COLD ATMOSPHERIC PLASMA APPLICATION ON GLUTEN QUALITY AND SOME BIOACTIVE COMPONENTS OF TRITICALE FLOURS
Res. Assist. Yahya Faruk KARATAŞ Dyt. Nida Nur OVA	Osmaniye Korkut Ata University (Türkiye)	DETERMINATION OF THE RELATIONSHIP BETWEEN VITAMIN D LEVELS AND HEALTH CONDITIONS OF PATIENTS APPLYING TO THE DIET POLYCLINIC
Assist. Prof. Dr. Olcay BOZDOĞAN	Malatya Turgut Ozal University (Türkiye)	DETERMINATION OF WEED SPECIES IN ROLL GRASS FIELD
Sıla YAKIN Res. Assist. Yasin KARAŞİN Assoc. Prof. Dr. Bülent TOPRAK	İzmir Kâtip Çelebi University (Türkiye)	MYCOREMEDIATION: COMBATING ENVIRONMENTAL POLLUTANTS

ONLINE PRESENTATIONS / 04.01.2025

ANKARA LOCAL TIME - 10 00 : 12 00
HALL-5, SESSION-1

Meeting ID: 833 1287 1999
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HEAD OF SESSION: Assoc. Prof. Dr. Burhan BEGER

AUTHORS	AFFILIATION	TOPIC TITLE
Omer ŞABAN Prof. Dr. Mehmet Ertuğrul GÜLDÜR	Harran University (Türkiye	BIOCHEMICAL RESPONSES OF MICRONIZED CACO 3 ON POTATO (Solanum tuberosum L.) PLANTS INFECTED WITH ALTERNARIA
Pharmacist Melisa SÜLLÜ Assoc. Prof. Dr. Gözde Özge ÖNDER Assoc. Prof. Dr. Münevver BARAN	Erciyes University (Türkiye)	INVESTIGATION OF CYTOTOXIC AND APOPTOTIC EFFECTS OF BORIC ACID O COLON CANCER CELL LINES BY IN VITRO METHODS
Assoc. Prof. Dr. Burhan BEGER	Van Yüzüncü Yıl University (Türkiye)	OUR EXPERIENCES WITH LUNG CYST HYDATIC IN CHILDHOOD
Res. Assist. Miraç Nur CİNER Prof. Dr. Emine ELMASLAR ÖZBAŞ Prof. Dr. H. Kurtuluş ÖZCAN Prof. Dr. Atakan ÖNGEN	Istanbul University-Cerrahpaşa (Türkiye)	USABILITY OF ACTIVATED CARBON OBTAINED FROM THE PYROLYSIS OF WASTE FILTER COFFEE GROUNDS AS AN ADSORBENT FOR COLOR REMOVAL
Gheorghe GIURGIU Prof. Dr. Manole COJOCARU	Deniplant-Aide Sante Medical Center (Romania) Titu Maiorescu University (Romania)	NATURAL MODULATION OF THE GUT MICROBIOTA IN PATIENTS WITH FOOD ALLERGIES. IMPACT OF ALERGIPLANT
Res. Assist. Kübra PASLIOĞLU Assoc. Prof. Dr. Pınar GÖBEL	Erciyes University (Türkiye) Ankara Medipol University (Türkiye)	GUT MICROBIOTA AND ITS RELATIONSHIP WITH CARDIOVASCULAR DISEASES

ONLINE PRESENTATIONS / 04.01.2025

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Meeting ID: 833 1287 1999
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HEAD OF SESSION: Lect. Dr. Irina-Ana DROBOT

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Ozan KARADUMAN Prof. Dr. Zehra YUMURTACI	Yıldız Technical University (Türkiye)	ENERGY EFFICIENCY AND ECONOMIC ANALYSIS OF A WHITE GOODS FACTORY WITH COGENERATION SYSTEM
Lect. Dr. Irina-Ana DROBOT	Technical University of Civil Engineering Bucharest (Romania)	WHY IS ARTIFICIAL INTELLIGENCE BIASED?
Kübra ÇAM Assoc. Prof. Dr. Ayşe Zeynep ZENGİN	Ondokuz Mayıs University (Türkiye)	THE EVALUATION OF THE POSTERIOR SUPERIOR ALVEOLAR ARTERY AND INFRAORBITAL FORAMEN LOCALIZATION WITH CONE BEAM COMPUTED TOMOGRAPHY

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HEAD OF SESSION: Assoc. Prof. Dr. Ersin YUCEL

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Burhan ARSLAN Assist. Prof. Dr. Necmi Cemal ÖZDEMİR	Kocaeli University (Türkiye	CALCULATION OF SHORT CIRCUIT CURRENTS IN ELECTRICITY DISTRIBUTION NETWORKS USING THE MODIFIED NODAL ANALYSIS
Gülafer İSTANBUL Prof. Dr. Hüseyin TUNA	Mehmet Akif Ersoy University (Türkiye)	DISSIPATIVE EXTENSIONS OF THE ONE-DIMENSIONAL CONFORMABLE FRACTIONAL ORDER DIRAC EQUATION
Kübra EFİLOĞLU Prof. Dr. Hüseyin Yılmaz ARUNTAŞ	Gazi University (Türkiye)	AN EVALUATION OF THE IMPACT OF THE FEBRUARY 6, 2023, KAHRAMANMARAŞ EARTHQUAKES ON REINFORCED CONCRETE PREFABRICATED BUILDINGS IN ADIYAMAN
Prof. Dr. Hüseyin TUNA Sibel YAYLA TUNÇ	Mehmet Akif Ersoy University (Türkiye)	EXTENSIONS OF THE HAHN DIRAC SYSTEM

ONLINE PRESENTATIONS / 04.01.2025

ANKARA LOCAL TIME - 12 30 : 14 30
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Meeting ID: 833 1287 1999
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HEAD OF SESSION: Dr. Deepa SONAL

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Shumaila NAZ	University of Karachi (Pakistan)	COMPARATIVE STUDY OF RELIGION
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