ResearchGate

See discussions, stats, and author profiles for this publication at: https://www.researchgate.net/publication/333172059

Effects of addition grape leaf powder on the quality properties of beef patties

Article · May 2019

CITATIONS
0

READS
220

1 author:



Cemalettin sarıçoban
Selcuk University
69 PUBLICATIONS **631** CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:

Determination of the effects of various levels of lemon and pomegranate peels on the microbiological properties of cig köfte View project

All content following this page was uploaded by Cemalettin sarıçoban on 29 March 2020.

The user has requested enhancement of the downloaded file.



The First Announcement of

AGROFOOD
20 - 21 June 2019, Istanbul

INTERNATIONAL CONFERENCE ON AGRONOMY AND FOOD SCIENCE & TECHNOLOGY

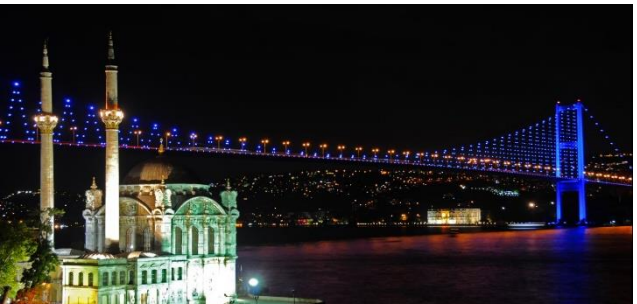
20 – 21 June 2019

Double Tree by Hilton Hotel, Avcılar, Istanbul, Turkey

www.agrofoodconference.org

AGROFOOD CONFERENCE E-BOOK (ORAL PRESENTATIONS)

galaksi







Welcome to Istanbul

We are honored to invite you to the **International Conference on Agronomy and Food Science and Technology (AgroFood),** which will be held on 20-21 June 2019 in Istanbul. The aims of this multi-faceted event are;

To present and discuss the latest innovations and trends,

To provide an appropriate environment to share the results of the researches on agriculture and food and the experiences gained in these fields,

Bringing together leading scientists, researchers and academics.

Food and agricultural industries have an important place in the economic life of all countries, regardless of their level of development. There is no substitute for these industries producing foodstuffs and raw materials for human nutrition. The global climate change, rapid decline of agricultural lands, serious declining the soil fertility and the threatening rise of food prices hint scenarios of a global food crisis in the near future. For this reason, the areas of Food and Agriculture Science, Processing and Technology continue to improve each passing day. In order to improve new technologies and innovations in the field of food and agriculture, it is necessary to establish a strong interdisciplinary cooperation by employing fundamental sciences such as biology, chemistry, physics and engineering. Therefore, the AgroFood Conference offers you a platform to present your ideas and researches on all related disciplines such as Food Science and Technology, Aquaculture Science, Nutrition Science, Animal Science, Horticulture, Agriculture and Food Biotechnology.

The AgroFood – Istanbul'2019 conference that is going to be launched on 20 June 2019 in Avcılar, Istanbul, Turkey, provides a fruitful, international and unique forum for exchange of views among participants currently working in the areas of agriculture and food science and technology.

We hope you enjoy the AgroFood – Istanbul'2019 conference and your stay in Istanbul, Turkey.

Chairman and Edidor

Dr. Okan ÖZKAYA

Co-Chairman and Editor

Dr. Kemal ŞEN





The AgroFood Conference Committees

CONFERENCE CHAIRMAN		
Dr. Okan OZKAYA	Cukurova University	TURKEY
CONFERENCE CO-CHAIRMAN		
Dr. Kemal SEN	Nevsehir Haci Bektas Veli University	TURKEY
ORGANIZING COMMITTEE		
Dr. Okan OZKAYA	Cukurova University	TURKEY
Dr. Kemal SEN	Nevsehir Haci Bektas Veli University	TURKEY
Dr. Serkan SELLI	Cukurova University	TURKEY
Dr. Hasim KELEBEK	Adana Alparslan Turkes Bilim ve Teknoloji University	TURKEY
Dr. Bulent ZORLUGENC	Nevsehir Haci Bektas Veli University	TURKEY
Dr. Cem Okan OZER	Nevsehir Haci Bektas Veli University	TURKEY
Dr. Bekir Gokcen MAZI	Ordu University	TURKEY
SCIENTIFIC COMMITTEE		
Dr. Abdul MALIK	Aligarh Muslim University	INDIA
Dr. Ahmet Salih SOZMEZDAG	Gaziantep University	TURKEY
Dr. Arun K. BHUNIA	Purdue University	USA
Dr. Ayse Zeynep Hicsasmaz KATNAS	Trakya University	TURKEY
Dr. Bekir Gokcen MAZI	Ordu University	TURKEY
Dr. Biagio FALLICO	University of Catania	ITALY
Dr. Brijesh K TIWARI	Dublin Institute of Technology	IRELAND
Dr. Cem Okan OZER	Nevsehir Haci Bektas Veli University	TURKEY
Dr. Cheewanun DACHOUPAKAN	Chulalongkorn University	THAILAND
Dr. Dr. H. Prathap Kumar SHETTY	Pondicherry University	INDIA
Dr. Giaouris EFSTATHIOS	University of the Aegean	GREECE
Dr. Grigorakis KRITON	Hellenic Centre For Marine Research	GREECE

Dr. Hasan TANGULER	Nigde Omer Halis Ozdemir University	TURKEY
Dr. Hasim KELEBEK	Adana Science and Technology University	TURKEY
Dr. Indira WICKRAMASINGHE	University of Sri Jayewardenepura	SRI LANKA
Dr. Kamil Emre GERÇEKASLAN	Nevsehir Haci Bektas Veli University	TURKEY
Dr. Mar VILANOVA	Spanish National Research Council	SPAIN
Dr. Mehmet DEMİRCİ	Tekirdag Namik Kemal University	TURKEY
Dr. Mohammed Mehdi FARID	University of Auckland	NEW ZEALAND
Dr. Murat YILMAZTEKİN	Inonu University	TURKEY
Dr. Mustafa KIRALAN	Balikesir University	TURKEY
Dr. Nuray Erkan OZDEN	Istanbul University	TURKEY
Dr. Rimantas VENSKUTONIS	Kaunas University of Technology	LITHUANIA
Dr. Sait Aykur AYTAÇ	Hacettepe University	TURKEY
Dr. Samir DROBY	The Volcani Center	ISRAEL
Dr. Serkan SELLİ	Cukurova University	TURKEY
Dr. Serpil ŞAHİN	Middle East Technical University	TURKEY
Dr. Sisir Kumar MITRA	International Society of Horticultural Science	INDIA
Dr. Son RADU	Universiti Putra Malaysia	MALAYSIA
Dr. Stéphanie ROUX	Paris Institute of Technology For Life	FRANCE
Dr. Yekta GÖKSUNGUR	Ege University	TURKEY

The ***International Conference on Agronomy and Food Science and Technology (AgroFood)*** is a peer reviewed international conference.



Keynote Speakers

1. Dr. Arun K. BHUNIA — Purdue University, Indiana, USA
2. Dr. Brijesh TIWARI — Dublin Institute of Technology, IRELAND
3. Dr. Mar VILANOVA — Spanish National Research Council, Pontevedra, Spain
4. Dr. Samir DROBY — The Volcani Center, Bet Dagan, Israel
5. Dr. Sisir Kumar MITRA — International Society of Horticultural Science, West Bengal, India
6. Dr. Stéphanie ROUX — Paris Institute of Technology For Life, Paris, France



Conference Topics

We invite abstracts in all areas related to agriculture and food engineering, including, but not limited to:

Food Science and Technology

- Food Assurance and Safety
- Food Production Technologies
- Food Microbiology
- Food Chemistry
- Food Biotechnology
- Food Rheology, Texture and Shelf Life
- Food Additives, Bioactive Ingredients and Antioxidants
- Food Engineering Basic Operations
- Applications of Enzymes and Foods
- Nanotechnology and Food Applications
- Functional Foods
- Traditional Food
- Process Simulation and Optimization
- Food Packaging

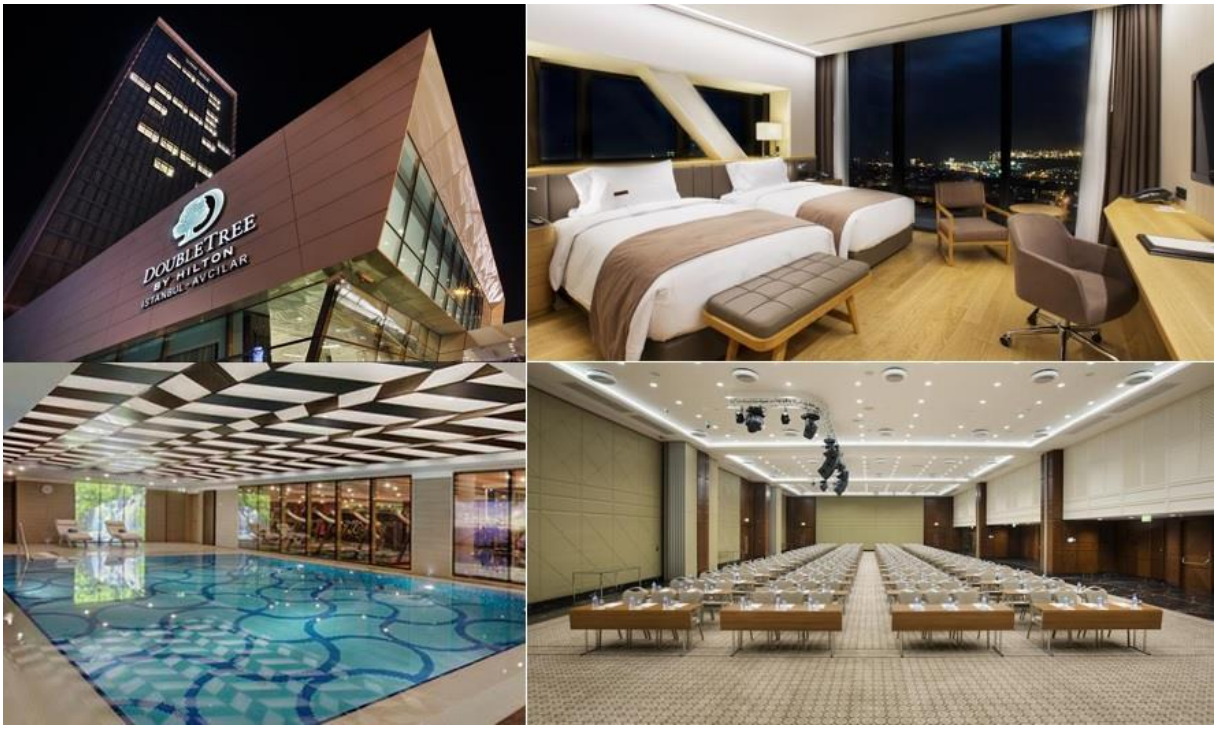
Agricultural Science and Technology

- Agricultural Science and Technology
- Plant Nutrients and Soil Fertility
- Plant Breeding and Breeding
- Plant Ecology and Physiology
- Industrial Plants and Bio-Diesel Production
- Alternative Plant Production Systems
- Plant protection
- Field Crops
- Horticultural Science and Technology
- Animal Science and Technology
- Agricultural Machinery and Innovation
- Seafood
- Environmental Problems and Solutions in Agriculture
- Climate Change and Its Effects on Agricultural Production
- Agricultural Biotechnology
- Post-harvest applications and technologies in agricultural products



Conference Venue

The 5 star Double Tree By Hilton Hotel, Avcılar, Istanbul.



The Social Programme

Welcome Lunch and Opening Ceremony

The participants (delegates, students and listeners) warmly invited to join us for the Opening Ceremony that takes place in the main hall of the Double Tree By Hilton Hotel, after the conference registration. After the Opening Ceremony, the organization committee will give an award to the Keynote speakers. After the award ceremony, the participants will go to the lunch meeting.

Gala Dinner, Bosphorus Cruise Tour & Night Show

The gala night offers a luxurious dinner cruise night out on the Bosphorus in Istanbul. You will enjoy delicious gourmet foods, while you dance with the panaromic view of the Bosphorus that separates the two continents Europe and Asia.

Enjoy as you cruise The Bosphorus and see historical places such as Dolmabahce Palace, Bosphorus Bridge, Ortakoy, Rumeli Fortress, Fatih Bridge, Beylerbeyi Palace, Maiden's Tower and also Istanbul's very famous night clubs as you dine the night away. No other Istanbul experience can match this unique combination of romantic ambiance. We combine fresh food with unparalleled views of Istanbul and live entertainment to create Istanbul‘s leading Bosphorus Dinner Cruise. After the dinner, you can enjoy the entertaining music and traditional show programs or simply relax with a drink and enjoy the view.





International Conference on Agronomy and Food Science and Technology (AgroFood)

20 - 21 June 2019, DoubleTree by Hilton Hotel - Avcılar, Istanbul, Turkey

CONFERENCE PROGRAMME

Time	Thursday, 20 June 2019
08:00-11:00	***Conference Registration***
11:00-12:00	***Openning Ceremony***
12:00-13:00	***Welcome Lunch***
13:00-13:20	**Keynote Speaker: Dr. Arun K. BHUNIA, Purdue University, USA** Global challenges in microbial food safety and solutions
13:20-13:40	**Keynote Speaker: Dr. Brijesh TIWARI, Teagasc Food Research Centre, IRELAND** Cold plasma technology for improving shelf life of foods
13:40-14:00	**Keynote Speaker: Dr. Mar VILANOVA, Spanish National Research Council, SPAIN** New applications to improve the grape aroma
14:00-14:20	**Keynote Speaker: Dr. Stéphanie ROUX, Paris Institute of Technology For Life, FRANCE** Modeling as a tool to understand and predict the extent of reactions in food products
14:20-14:45	***Coffee Break***

Time	Thursday, 20 June 2019			
	Hall A & Session 1 Chair: Dr. Arun K. Bhunia	***Hall B & Session 1 Chair: Dr. Brijesh K Tiwari***	***Hall C & Session 1 Chair: Dr. Stéphanie Roux***	***Hall D & Session 1 Chair: Dr. Silvius Stanciu***
14:45-15:00	Impact of Environmental and Host-Induced StressonPathogenesis,Disease, and Microbial Detection A. K. Bhunia	LC-DAD-ESI-MS/MS characterization of elderberry flower (Sambucus nigra) phenolics extracted with various solvents T. Uzlasir, P. Kadiroğlu, S. Selli, H. Kelebek	Improvement of microwave-vacuum drying system and mathematical modeling of pear A. Polat, O. Taşkın, N. İzli	Researches on the incidence of pesticide residues in food products on the Romanian market S. Stanciu
15:00-15:15	Investigation of the microbial profile of argan, bergamot, nigella sativa seed, pomegranate seed and ginger oil I. Guldal, S. Karabiyikli	Antioxidant andbiological activitiesof blackthorn extracts B.M. Popović, B. Blagojević, R.Ž. Pavlović, N. Mićić, S. Bijelić, B. Bogdanović, A.T. Serra	Combined effects of novel technologies on vacuum impregnation treatments of foods A. Görgüç, E. Gençdağ, F.M. Yılmaz	The Levels of 5-hydroxymethylfurfural in different kinds of pekmez N. İçli
15:15-15:30	Modelling effect of freeze-thaw stress on the growth of wine yeasts isolated from Turkish region H.A.Karaoglan,N. DeveliIsikli, N. Coksoyler, F. Ozcelik	Impact of honey color from Jordanian flora on total phenolics and flavonoids contents and antioxidant activity M. Al-Dabbas, H. Otoom	Effect of micronutrients on the bioavailability of flavonoids S. Kamiloglu	The Levels of organochlorine pesticides in milk; The situation in Turkey N. İçli
15:30-15:45	Detection of beta-lactamase genes blaA and blaB and ampicillin susceptibility of Yersinia enterocolitica from food S. Arslan, H.G. Kabakcı	Determination of some sugar contained products and amount of advanced glycation ends products via high-performance liquid chromatography – spectrophotometric B. Yusufoğlu, M. Yaman, E. Karakuş	The Effect of impregnation pre-treatments on drying kinetics of saffron milk cap (lactarius deliciosus) E. Gençdağ, A. Görgüç, F.M. Yılmaz	Investigation of the availability of image processing as an alternative method to spectrophotometry for prediction of hmf content in honey for different temperatures T. Türkoğlu, S. Sabancı, A. Baltacı, S.N. Dirim
15:45-16:00	Monitoring of microbial changes during incubation in the yoghurts prepared with different culture concentrations by DNA melting curves B. Çetin, H. Aktaş, H. Meral	Thermal inactivation of listeria monocytogenes in Inegöl and kasap köfte (traditional Turkish meatballs) A. Kemah, A. Dikici, S.B. Bozatlı	The Effect Synthetic Antioxidants on the Oxidative Stability of Sunflower and Corn Oils T. Keceli Mutlu	How Safe Are Romanian Foods to GMOs Contamination? S. Stanciu, C. I. Bichescu
16:30-17:30	***Bus Transfer From the Conference Hotel to the Cruise Tour***			
17:30-19:00	***Free Time in Eminonu District***			
19:00-23:00	***Bhosphorus Tour & Gala Dinner & Turkish Night Show***			

Time	Thursday, 20 June 2019			
	Hall E & Session 1 Chair: Dr. Cem Baltacıoğlu	***Hall F & Session 1 Chair: Dr. Hande Baltacıoğlu***	***Hall G & Session 1 Chair: Dr. Haşim Kelebek***	***Hall H & Session 1 Chair: Dr. Yusuf Z. Menceloğlu***
14:45-15:00	Drying characteristics of white cheese dried by different methods Ö. Köprüalan, M. Koç, N. Koca, F. Kaymak-Ertekin	Image processing techniques in the food applications H. Yüksel, S.N. Dirim	Effectof picklingon some biochemical properties of brassica vegetables: cabbage, cauliflower and broccoli R. Arslan, A. Güleç, H. Tokbaş, E.C. Eroglu, S. Aksay	Magnetic iron oxide nanoparticle-based nanobiotechnology applications in agri-food production K. Gokduman
15:00-15:15	Effects of explosive puff drying and hot air drying on quality characteristics of nutritive pumpkin chips Ö. Altay, Ö. Köprüalan, A. Bodruk, F. Kaymak-Ertekin	Effect of mild temperature-long time (MTLT) treatment on bioactive compounds in peach juice H. Baltacioglu	A new dehydration technique: Refractance window drying Ö. Süfer	Effects of carbon dots extracted from sugar beet molasses on the growth of different plants S. Dinç, M.Z. Karapçin, M. Kara, E. Tuncay
15:15-15:30	Influence of edible coatings on some physicochemical properties of dried banana (Musa cavendish) A. Aygün, M. K. Uslu, M. Torun, T. Aygün	Selective factors among the green technologies for extraction of bioactive compounds C. Değerli, S.N. El	Effect of dryingmethods onquality characteristics of black myrtle (myrtus communis l.) H. Tokbaş, R. Arslan, A. Güleç, S. Aksay	Comparison of antioxidant activities of carbon dots synthesized from different carbon sources M. Kara, S. Dinç, S. Kolaylı, C. Birinci
15:30-15:45	Determination of thin layer drying kinetics and mathematical modeling of bay (laurus nobilis l.) leaves H. Tokbas, H.İ. Ekiz	Optimization of oil body isolationfrom pomegranate seeds I. Tontul, D. Sert	Sourdough bread with pumpkin pomace M. Şimşek Aslanoğlu, Ö. Süfer, H. Demir, B. Eke, R. Koşay	Nanoengineering in Agriculture and Food Science Y.Z. Menceloglu
15:45-16:00		Optimization of mucilage extraction from Chia seeds S.A. Tontul		
16:30-17:30	***Bus Transfer From the Conference Hotel to the Cruise Tour***			
17:30-19:00	***Free Time in Eminonu District***			
19:00-23:00	***Bhosphorus Tour & Gala Dinner & Turkish Night Show***			

Time	Friday, 21 June 2019			
	Hall A & Session 2 Chair: Dr. Mar Vilanova	***Hall B & Session 2 Chair: Dr. Bülent Çetin***	***Hall C & Session 2 Chair: Dr. Vesna Levkov***	***Hall D & Session 2 Chair: Dr. Dragana Stamenov***
08:30-08:45	Assessment of Representativeness of Aromatic Extracts for Aroma Characterization: A study of Caper G. Güçlü, A. S. Sönmezdağ, S. Selli, H. Kelebek	GMOs in theRepublic ofMoldova. Legislative Framework and Public Perception of Genetically Modified Food M. Munteanu Pila, S. Stanciu	STEC Survival and synthetic gastric fluid resistance during storage of experimentally produced frankfurters S.B. Bozatli, A. Dikici, B. Ergönül	Extracellular protease genes in motile aeromonas species isolated from oncorhynchus mykiss S. Arslan, F. Özdemir
08:45-09:00	Effect of Geographic Conditions on Pine honey Carbon Isotope Value, Texture and Color Properties O. Sevindik, G. Guclu, M. Yetişen, H. Kelebek, S. Selli	Food Safety and Assurance Through Halal Certification: The Malaysian Experience S. Md Shaarani	Retention of vitamin B6 during different cooking methods in fish and chicken meats J. Çatak	Microbial inoculants in cabbage productioneffect on cabbage yield and soil microbiological activity T. Hajnal Jafari, S. Đurić, D. Stamenov
09:00-09:15	Comparison of Different Techniques Used in Determination of Aroma Active Compounds in Foods by GC-O E. Ereli, K. Şen	Investigation of microbial changes of yoghurts prepared with different culture concentrations by molecular and classical methods during storage H. Aktaş, B. Çetin	The effect of grape vinegar on the some physicochemical and textural properties of chicken breast meat K. Ünal, A. Cabi, E. Alagöz, C. Sariçoban	Detection of genes involved in biofilm formation in staphylococcus aureus isolates from meat and quantification of their biofilm formation S. Arslan, C.B. Eken
09:15-09:30	GC-MS-Olfactometric Characterization of Key Odorants in Pine Honey from Two Different Regions of Turkey G. Guclu, O. Sevindik, H. Kelebek, S. Selli	Molecular and phenotypic characterization of siderophore production in yersinia enterocolitica isolates from meat and milk products S. Arslan, F. Özdemir	Incorporation of selected herbal plant extracts to suppress glyceamic impact of cane sugar C.H.Samarasinghe, M.A. Jayasinghe, S.P.A.S. Senadheera, I. Wijesekara,	Chemical composition, biological activity and microbial diversity of kombucha İ.Y. Sengun, A. Kirmizigul
09:30-09:45	Effects of matrix composition on perception of strawberry flavour in model dairy gels P. G. Owusu-Darko, A. Paterson, J. Piggott	Extraction,Processing and Functional Properties of Pistachio Oil T. Mutlu Keceli	Chemical investigation and biological activities of the lamiaceae plant: Thymus fallax E. Eroğlu-Özkan, M. Boğa, Y. Yeşil	Production of probiotic beverage with oat milk containing grape juice using lactobacillus rhamnosus G. Tiryaki Gündüz, H. Didar Sözbir
09:45-10:00		Processing, Usage and Functional Properties of Peanut Oil T. Mutlu Keceli	Nutritive Value And Health Benefits Of The Modified Eggs With Bioactive Components N. Gjorgovska, K. Filev, S. Grigorova, D. Abadjieva, V. Levkov	Total phenolic contents, antioxidant and antimicrobial activities of koruk (unripe grape, vitis vinefera l.) products I.Y. Sengun, B. Ozturk
10:00-10:30	***Coffee Break***			

Time	Friday, 21 June 2019			
	Hall E & Session 2 Chair: Dr. Chinyere B. B. Okebalama	***Hall F & Session 2 Chair: Dr. Yunus Emre Tuncil***	***Hall G & Session 2 Chair: Dr. Ayşe Özyılmaz***	***Hall H & Session 2 Chair: Dr. Bekir Gökçen Mazı***
08:30-08:45	Investigation of socio-economic characteristics of wheat producers on certified seed use: The case of Ankara province C. Cevher, B. Altunkaynak, S. Coşkun Cevher	Structures features of dietary fibers of Turkish hazelnut (corylus avellana l.) and hazelnut skin Y.E. Tuncil	A preliminary study of micro element accumulation of four fish species from North Eastern Mediterranean A. Özyılmaz	Determination of some chemical and physical properties of structured lipids produced by enzymatic interesterification of beef tallow with corn oil A.B. Aktaş, B. Ozen
08:45-09:00	Mapping distribution of soil quality parameters and indexes using geostatistical methods in the harran plain A.V. Bilgili, Y. Kaplan	Wheat starch-lauric acid complexation in the presence of bovine serum albumin S.S.Severcan, B. OskaybasEmlek, A. Özbey, K. Kahraman	Hepatosomatic Index (HSI) and crude protein contents of four cartilaginous fish species from the Northeastern Mediterranean A. Özyılmaz	Expression of full-length and mature αamylase from bacillus sp. in p. pastoris and characterization of the recombinant enzyme F. Erden-Karaoğlan, M. Karaoğlan
09:00-09:15	Fungicides usage status and current problems of growers in Sanliurfa province A. Bilgili, A. Aksu Altun, C. Yetkin, S. Ipekcioglu	Effects of Salt Substitue on Mineral Contents of Circassian Cheese During Storage Y. Parlak, N. Güzeler	Leptin receptor (LEPR) gene polymorphism in some of the donkey populations of Turkey R. Işık, F. Özdil	D-tagatose 3-epimerase enzyme production for converting D-fructose into D-allulose E. Parıldı, B. Devrim Özcan, E. Dikkaya, O. Kola, M.R. Akkaya, N. Cengiz
09:15-09:30	Site Specific PoultryManure Recommendation for Cucumber (Cucumis Sativus L.) and It's Effect On The Fertility of an Ultisol after Three Years Continuous Application C.B. Okebalama, K.C. Ogunezi, I.C. Agbo, K.C. Asogwa, and B. Marschner	Method of determination of water-soluble protein in Bulgarian semi-hard yellow cheese T.Kolev, G.Dicheva, T. Angelova, S. Laleva, N. Naydenova	The Nutritional Quality of Freshwater Fish of Republic of Moldova M. Munteanu Pila, S. Stanciu	Effects of Cinnamon on Type-2 Diabetes Mellitus E. F. Topdas, A. Odunkıran, M. Sengul
09:30-09:45	Cutting Force and Energy Requirement of Boğazkere Grape (Vitis vinifera l.) Cane A. Sessiz, A. K. Eliçin, Y. Bayhan	Comparison of polyphenolic characteristics and cytotoxic activities of fermented morus alba cultivars from Turkey M.F. Seyhan, A. Diren		
09:45-10:00	Shear Force and Energy Requirement of Rice Stem R. Esgici, F. G. Pekitkan, A. Sessiz			
10:00-10:30	***Coffee Break***			

	Hall A & Session 3 Chair: Dr. Serkan Selli	***Hall B & Session 3 Chair: Dr.Yusuf Z. Menceloğlu***	***Hall C & Session 3 Chair: Dr. Bige İncedayı***	***Hall D & Session 3 Chair: Dr. Timea Hajnal Jafari***
10:30-10:45	Contraverses in the determination of antioxidant activity in food and biological samples-from individual determinations to PCA analysis B.M. Popović, R.Ž. Pavlović, B.Blagojević, N. Mićić, T. Jurić	Investigation of anti-fungal activity of encapsulated Saccharomyces boulardii and clove oil emulsion in strawberries at postharvest stage A. Hacioglu, F. Poyraz, A. Orcen, B. Berber Orcen	Drying kinetics and quality characteristics of hot air dried potato cv. jelly under different process parameters N. Türkmen Erol, B. İncedayi, F. Sari, Ö.U. Çopur	The effects of radicle pruning on plant growth and some physiological parameters of bean under drought stress E. Yıldırım, M. Ekinci, S. Örs, R. Kul
10:45-11:00	Effect of Different Harvest Period on Phenolic Compounds and Some Important QualityParameters of KırmızıPistachio Variety T. Uzlasir, A. S. Sönmezdağ, G. Güçlü, P. Kadiroğlu, S. Dıblan, N. Cengiz, S. Selli, H. Kelebek	Effect of different harvesting time on quality and phytochemicals in prickly pear (opuntia ficus indica) E.C. Eroglu, R. Arslan, A. Güleç, S. Aksay	Nutritional potential characterization and bioactive properties of caper products B. Seyhan, B. İncedayi	Combine effects of drought and cadmium metal stress on lettuce seedling M. Ekinci, E. Yıldırım, S. Örs, R. Kul
11:00-11:15	The Phenolic Composition and Antioxidant Activities of Red Beetroots H. K. Şaşmaz, P. Kadiroglu, S. Selli, H. Kelebek	Effect of Photoselective Nets on Harvest Quality and Physicochemical Characteristics of apples cv.'Fuji' O.Ozkaya, N. Dölek, B. Imrak, A. Küden, Ö. Dündar, H. Demircioğlu	The Effect of the Addition of Different Concentrations of Four Hydrocolloids on Sensory Properties of Strawberry Jam E. S. Erten, T. Erten	Developmentofschemes for provided services of forest shelterbelts in dry climate A. Chikalanov, S. Peteva, Y. Petkov, M. Lyubenova, I. Todorova
11:15-11:30	Volatile Composition of Althaea officinalis L. Flowers G. Guclu, O. Sevindik, H. Kelebek, S. Selli	LongLastingSanitation of Postharvest Storage Areas by using Sol Gel Chemistry N. Ö. Şanlı and Y. Z. Menceloglu	Effect of cultivar type and maturation level on sorption isotherms of apricots B. Öztürk, F. Seyhan	The increase of productive capacity of acidic soil by the application of microorganism and liming D. Stamenov, S. Đurić, T. Hajnal Jafari
11:30-11:45	Impact of Ultrasonic Frequencies on Phlorotannin Content of Seaweeds V. Ummat, C. P. O'Donnell, G. Rajauria B. K. Tiwari	Active Modified Atmosphere Pallet Cover Treatment Effects on Storage and Shelf Life Quality of Strawberry E. Korkut, E. Kurt, N. Yavuz, O. Ozkaya		
11:45-12:00		Cold Storage of O'gosho Persimmon A. E. Özdemir, D. Kılıç, C. Toplu, A. Çelik, S. Ş. Arslan, H. Yıldırım		
12:00-13:00	***Lunch Break***			

Time	Friday, 21 June 2019			
	Hall E & Session 3 Chair: Dr. Salih Aksay	***Hall F & Session 3 Chair: Dr. Michael Wisniewski***	***Hall G & Session 3 Chair: Dr. Sema Başbağ***	***Hall H & Session 3 Chair: Dr.Türkan Keçeli Mutlu***
10:30-10:45	The effect of different extraction techniques on color values of peach pomace C. Baltacıoğlu, İ. Okur, B. Harmankaya, D. Bayrakçı, F. Turan, H. Koşok	Theeffect ofhumidification on seed germination and seedling emergence of sweet corn seeds E. Ozden, A. Unlu, I. Demir	Determination of Agronomic and Technological Properties Varieties of Flax in Sowing Different Times (Linum usitatissimum L) N. Tayınmak, S. Basbag, R. Ekinci	The effect of continuous system ultraviolet light application on the quality of yoghurt with surface cream M.Ildız, G. Tiryaki Gündüz, M. Urgu Öztürk, D. Kışla, S. Ünlütürk, N. Koca
10:45-11:00	Extraction ofanthocyanins fromgrape pomace by using supercritical carbon dioxide E. Koçak, F. Turan, G. Ova, F. Pazir	Effects of different diets on parasitization performance oftrichogramma spp. (hymenoptera: trichogrammatidae) N. Özder, E. Tayat	Association between skin pigmentation, physiological parameters and adaptation of dairy goats to environmental stress D.J. Agossou, S. Göncü, N. Koluman	Physicochemical properties of Gemlik type black olives obtained from the market C. Demir, O. Gürbüz
11:00-11:15	Determination of bioactive properties of protein and pigments obtained from spirulina platensis R. Arslan, E.C. Eroglu, S. Aksay	Establishment of in vitro clonal cutting production protocol of laurel (laurus nobilis l.) S.D.Royandazagh, E.C.Pehlivan, H. Parmak	Potentials and challenges for future development of milk production and industrial processing in Republic of Benin D.J. Agossou, O. Zannou, C.G. Tchemadon, M.D. Aboudoulaye, A.Fatondji, S. Agossou, Y. Toukourou, N. Koluman	Detecting of 3-MCPD in edible oil by near infrared spectroscopy (NIR) H. Basdogan, S. Karasu, R.M. Yildirim
11:15-11:30	Solid-liquid solvent extraction of carotenoids from spaghetti squash (cucurbita pepo l.) by response surface methodology F. Pazır, F. Turan, E. Koçak, G. Ova	Phylogenical and Serological Discrimination of Sharka Disease at East Mediterranean Region of Turkey G. Koç	The effect of pre-sowing treatments on seed viability and physiology in tomato E. Ozden	Investigation of potential use of by-products from cold press industry as natural fat substitutes and functional ingredients in a low fat salad dressing Z.H. Tekin, S. Karasu
11:30-11:45		Biological Control of Fusarium graminearum and Sclerotinia homoeocarpa F.T. Benn. on Turfgrass V. Askin, A. Coskuntuna		The Changes in Quality Criteria of Some Edible Oils During Frying T. Mutlu Keceli
11:45-12:00		Silage Additives S. Gul, L. Coskuntuna		
12:00-13:00	***Lunch Break***			

Time	Friday, 21 June 2019			
	Hall A & Session 3 ***Chair: Dr. Roselina Karim***	***Hall B & Session 3*** ***Chair: Dr. Cem Okan Özer***	***Hall C & Session 3*** ***Chair: Dr. Bülent Zorlugenç***	***Hall D & Session 3*** ***Chair: Feyza Kıroğlu Zorlugenç***
13:30-13:45	Tarhana: A source of gluten in the diet and potential methods of producing gluten-free tarhana B. Karakaş Budak	Comparative Analysis of Juice Volatiles in Selected Mandarins (Owari, Mihowase Satsumas and Hernandina, Nules Clemantines) Grown Under Mediterranean Ecological Conditions S. Yabaci Karaoğlan, O. Özkaya, B. Çimen, T. Yeşiloğlu	Characterization of aroma and physochemical compounds at different maturation stages of jujube (Ziziphus jujube Mill.) O.Özkaya, K.lŞen, B.Öztürk, H. Demircioğlu	Physico-chemical Characteristics of Some Strawberry (Fragara ananassa, L.) Cultivars Grown in Adana/Turkey F. Kıroğlu Zorlugenç, B. Zorlugenç, H. İ. Oğuz, N. E. Kafkas
13:45-14:00	Cappadocia region and its traditional dairy products M.K. Esen, N. Güzeler	Rainfall harvest: Example of Nevşehir Hacı Bektaş Veli University S. Sahinkaya, O. Arslan, Y. Ballı, B. Özkor	A Traditional Food: Kefir B. Zorlugenç, E. Ereli	Physicochemical and antioxidant properties of some grape (Vitis vinifera L.) cultivars F. Kıroğlu Zorlugenç, B. Zorlugenç, C. O. Özer
14:00-14:15	Some microbiological properties of kefir yogurts produced by using milk powder and whey powder M.K. Esen, N. Güzeler	Food Protection With Propolis E. Demir Özer	Effects of Semperfresh Applications on Storage and Quality Characteristics of Santa Maria Pear Fruit O. Özkaya, H. Demircioğlu, E. Kurt, A. Bahar	Drying Kiwi Fruit by Osmotic Dehydration F. Kıroğlu Zorlugenç, H. Fenercioğlu
14:15-14:30	Utilization of different bean flour and rice flour combinations in the gluten-free tarhana formulation S. Güvener, S. Lubabe Erdoğan, G. Çalışkan Koç, B. Çabuk	The Effects of Light Sources and Packaging Forms on Storage Stability of Fresh Beef Meat during Refrigerated Storage F. B. Özyürek, N. Karataş, M. Tapan, M. Yavuz, İ. Güler, B. Tekinay, C. O. Özer	Effects of 1-Methylcyclopropene (1-MCP) Applications onStorageand Quality Characteristics of Santa Maria Pear Fruit O. Özkaya, A. Bahar, H. Demircioğlu, E. Kurt	
14:30-14:45	Effect of seed-to-water ratio, coagulant types and concentration on the yield and physicochemicalpropertiesof kenaf (Hibiscus cannabinus L.) seed hard tofu S. I. Giwa, R. Karim, N. Saari, W.Z.W. Ibadullah		The General Microflora and Identification of Coliform Group Bacteria from The Yoghurt Marketted in Adana - TURKEY B. Zorlugenç, İ. B. Evliya	
14:45-15:00	Production Method and Some Properties of Kolot Cheese Y. Parlak, N. Güzeler		A Traditional Fermented Food: Kumiss B. Zorlugenç, E. Ereli	
15:00-15:30	***Coffee Break***			
Social Tour Programme *				
Half Day Tour	***Social Event - Istanbul Tour*** (The registration fee does not cover these tours.)*			

Programme of Poster Presentations

Poster Number	Poster Presentations
	Posters should be hanged on 20 & 21 June 2019 by the authors.
1	Antioxidant activity of some edible flowers from Bulgaria D. Petkova, D. Mihaylova, P. Denev, A. Krastanov
2	Nonhormonal additives for animal nutrition – an alternative in animal reproductivity (A mini review) D. Mihaylova, A. Krastanov
3	Bioactive compounds in water extracts prepared from rosehip containing herbal blends N. Petkova, M. Kirchev, M. Ognyanov, M. Stancheva, P. Denev
4	Evaluation of nutritional value and antioxidant potential of biscuits enriched with selenium and Jeruslaem artichoke flour N. Petkova, I. Vassieva, M. Hristova, S. Krustev, P. Denev
5	A traditional drink: Nogay tea E. Nakilcioğlu Taş
6	An alternative functional food: Donkey milk E. Nakilcioğlu Taş
7	Preparation and storage temperature effect on polyphenolic content and antioxidant activity of cornelian cherry fruit jam N. Mićić, B. Popović, B. Blagojević, R. Ž. Pavlović, T. Jurić
8	Cornelian cherry leaf as an underestimated source of phytochemicals T. Jurić, B. Popović, B. Blagojević, R.Ž. Pavlović, N. Mićić
9	Antioxidative effect of dry distilled rose petals extract in Bulgarian type dry fermented sausages with reduces nitrate content D.K. Balev, D.B. Vlahova Vangelova, S.G. Dragoev
10	Changes of fatty acid profiles and sterols, tocopherols and carotenoids content of pork by antioxidant type phytonutrients D.B. Vlahova-Vangelova, D.K. Balev, S.G. Dragoev
11	Effect of somatic cells count of raw milk on the carbonyl compounds and low molecular weight fatty acids formation in ayran G.Y. Ivanov, E. Bilgucu
12	Effect of somatic cells count of raw milk on the proteolysis in farmers cheese G.Y. Ivanov, E. Bilgucu
13	Antioxidant capacity of yogurt fortified with polyphenol extract from strawberry pomace I. Ivanova, M. Dimitrova, G. Ivanov
14	Growth and activity of probiotic bacteria in fermented milks fortified with polyphenol extract from strawberry by-product M. Dimitrova, I. Ivanova, A. Slavchev, G. Ivanov
15	Evaluation of antioxidant activity and total phenols content in acerola (barbados cherry) M. Yamaş, D. Bilgic Alkaya, S. Ayaz Seyhan
16	Whitening effect of the extracts from locusta migratoria H.J. Kim, G.H. Lim, S.Y. Kim, J.E. Kim, Y.B. Lee, D.I. Kim
17	Production method and quality characteristics of pet food with locusta migratoria powder H.J. Kim, G.H. Lim, S.Y. Kim, H.Y. Koo, C.S. Park
18	The parasitism performance of trichogramma pintoi in stored materials E. Tayat, N. Özder

Poster Number	Poster Presentations *Posters should be hanged on 20 & 21 June 2019 by the authors.*
19	Non-O157 STEC survival and gastric fluid resistance during storage of commercially available frankfurters A. Dikici, S.B. Bozatli, B. Ergönül
22	Effect of aging on taste and smell perception C. Dadalı, Y. Elmacı
23	The Effect of different extraction methods on color values of sour cherry pomace C. Baltacıoğlu, İ. Okur, S. Uysal, M. Kılıç, E. Çal, M. Topçu
24	Investigation of antifungal activity of yeasts ısolated from orange fruits against penicillium digitatum A. Örçen, M. Tözün, F. Poyraz, A. Hacıoğlu, B. Berber Örçen
25	Phytochemical composition of black cumin (Nigella sativa L.) seeds from Turkey as an unconventional source for the food industry H. Fidan, S. Stankov, A. Daraba, H. Dogan, I. Alexieva, A. Stoyanova, S. Ercisli
26	Rheological and sensory properties of glazes prepared with carob and cocoa powders S. Stankov, M. Dzhivoderova, E. Dimitrova, H. Fidan
27	Heterologous expression of aspergillus niger pectinase gene in pichia pastoris and its characterization M. Karaoğlan, F. Erden-Karaoğlan
28	Determination of total phenolic, antioxidant, sugar contents, minerals and pomological characteristics of some banana cultivars and local types E.C. Eroglu, R. Arslan, M. Unlu, R. Arslan
29	Using of hydrocolloids in meat and meat products A. Cabi, K. Ünal, E. Alagöz, C. Sarıçoban
30	Mannooligosaccharide production by mannanase enzyme application from coffee extract S. Benemir Erkan, A. Ozcan, C. Yilmazer, H.N. Gurler, G. Yavuz, E. Yatmaz, I. Turhan
31	Effects of mannanase enzyme treatment on yield, beta carotene content and turbidity in the carrot juice production H.N. Gurler, C. Yilmazer, S. Benemir Erkan, A. Ozcan, E. Yatmaz, I. Turhan
32	The role of global climate change on pasture and rural economy M. Dölek, S. Muğan Ertuğral, C. Dölek Gencer
33	Factors effecting of reproductive biology and fruit settings ın olive C. Dölek Gencer, M.T. Özkaya, D.A.K. Alnaqeeb
34	Research on increasing the value added ın oliviculture C. Dölek Gencer, M.T. Özkaya, M. Dölek, S. Muğan Ertuğral
35	Climate change and agriculture H. Sayğı
36	Green manure used purpose cowpea (vigna sinensis l.) and soybean (gylcine max. l. merr.) yield exposed organic strawberry production, quality, leaf effects on soil fertility and nutrient content features H. Sayğı
37	Physiological and morphological research of olive leaves in irrigated and non-irrigated conditions D.A.K. Alnaqeeb, M.T. Özkaya, C. Dölek Gencer
38	Formulation of a selective medium for the isolation and enumeration of lactobacillus bulgaricus A. Oyeniran, S.A. Ibrahim, R. Gyawali, T. Zimmerman, A. Krastanov, S.O. Aljaloud

Poster Number	Poster Presentations
	Posters should be hanged on 20 & 21 June 2019 by the authors.
40	Determination of basic kinetic parameters of strains Streptococcus theromophilus isolated from naturally fermented dairy products A. Krastanov, M. Georgiev, B. Goranov, S. A. Ibrahim, M. Baltadjieva
41	Pectin and Whey Protein Concentrate Minimizes the Generation of Acid Whey in Greek Style Yogurt S. A. Ibrahim, R. Gyawali, T. Zimmerman, A. Krastanov, S. O. Aljaloud, A. Daraba
42	Bactericidal activity of copper-ascorbic acid mixture against staphylococcus aureus spp. R. Gyawali, S.A. Ibrahim, T. Zimmerman, A. Krastanov, S.O. Aljaloud
43	Antimicrobial activities of salvia sclarea l. and salvia aethiopis l. essential oils I.Y. Sengun, E. Yucel, G. Kilic, B. Ozturk
44	Enrichment of antioxidant compounds of fluid bed and freeze dried apples by spirulina platensis A. Bodruk, S. Cavella, A. Raiola
45	Quince seed mucilage as edible coating for mandarin fruit: Determination of the quality characteristics during storage A. Kozlu, Y. Elmacı
46	Pear classfication using ımage processing techniques S. Sabancı, H. Yüksel, S.N. Dirim, A. Baltacı
47	Mannooligosaccharides production from different gums using mannanase C. Yilmazer, S. Benemir Erkan, A. Ozcan, H.N. Gurler, G. Yavuz, E. Yatmaz, I. Turhan
48	Mannanase production by solid state fermentation (SSF) using recombinant aspergillus sojae AsT3 (ATCC 11906) C. Yilmazer, I. Turhan
49	The effects of mannanase activity on viscosity in different gums S. Benemir Erkan, A. Ozcan, C. Yilmazer, H.N. Gurler, E. Karahalil, M. Germec, E. Yatmaz, I. Turhan
50	Effects of furfural concentration on ethanol production S. Benemir Erkan, E. Yatmaz, M. Germec, I. Turhan
51	A scale-up processing with different microparticle agent for mannanase fermentation in bioreactor H.N. Gurler, S. Benemir Erkan, A. Ozcan, C. Yilmazer, E. Karahalil, M. Germec, E. Yatmaz, I. Turhan
52	The effect of different phenol concentrations on inulinase production H.N. Gurler, M. Germec, I. Turhan
53	Impacts of acidification and high-pressure treatment on sensory characteristics of licorice root sherbet S. Aday, Ç. Uysal Pala, Y. Karagül Yüceer
54	Some important health benefits of D-allulose (D-psicose) E. Parıldı, O. Kola, B.D. Özcan, E. Dikkaya
55	Kinetic improvement of bioactive compounds extraction from red grape (vitis vinifera Moldova) pomace by ultrasonic treatment F. Dranca, M. Oroian
56	Combined enzyme-assisted extraction – ultrasound-assisted extraction of pectin from malus domestica 'fălticeni' apple pomace F. Dranca, M. Oroian
57	The Effect of organic fertilizer (compost) doses on physical properties of pomegranate fruit A. Şakak, H. Kara, A.S. Nacar, M. Coşkun, T. Monis, A. Bilgili, M. Tarini, S. Yetim

Poster Number	Poster Presentations *Posters should be hanged on 20 & 21 June 2019 by the authors.*
58	Microbiological control of local and imported foodstuffs- Algiers A. Zaafour, A. Halima Salem
59	Genetic diversity evaluation of amylolytic lactic acid bacteria (LAB), isolated from 20 traditional Bulgarian sourdoughs using multiplex PCR, genotyping and 16S rDNA analysis A. Angelov, M. Petkova, P. Stefanova, V. Gocheva, N. Tahsin, L. Kuzmanova
60	Comparison of endophytic colonization of Bulgarian variety of tobacco by entomopathogenic fungi - *Beauveria bassiana* and *Beauveria brongniartii* M. Petkova, V. Masheva, V. Spasova-Apostolova, N. Tahsin
61	Safety of phytomedicines for pregnant women marketed in the region of Tlemcen (northwestern of Algeria) S. Hassaïne, D. Achouri, A. Cherki
62	Yeasts and moulds species evolving during production of traditional Beaten cheese V. Levkov, N. Gjorgovska, S. Mojsova
63	Unravelling Maillard reaction and caramelization extents in a cake model by the quantitative analysis of reaction substrates, intermediates and products for baking at different levels of temperature and convection J. Lee, S. Roux, B Rega, C. Bonazzi
64	Water Kefir I. Barutçu Mazı, E. Akköse, B. Şahin
65	Physicochemical and Sensory Characterization of Bread Produced from Different Dough Formulations by Kluyveromyces lactis G. Akyüz, B. G. Mazı
66	Evaluation of Quality and Emulsion Stability of A Fat-Reduced Beef Burger Prepared With an Olive Oil Oleogel C.O. Özer, Ş. Çelegen
67	The effects of drying methods on the quality parameters of potatoes and red beetroot purée G. D. Mocanu, I. Dima Gheonea, L. Mihalcea, V. Vasilica Barbu, O. V. Nistor, D. Gi Andronoiu, O. E. Constantin, L. Pătrașcu, E.
68	New Sugar-Free Product on the Basis of Almond Flour and Pumpkin Pulp L. Mihalcea, M. Ioan, L. Patrascu, G. D. Mocanu, I. Dima Gheonea
69	Valorisation and extraction of the essential oil from a food waste: lemon peels S. Bertouche, N. Sahraoui, S. Koribeche, M. Lehouaoui, R. Farah, A. Mouheb.
70	Evaluation of biological activities of jujube honey from three regions of Algeria S. Bertouche, N. Sahraoui, M. Mellal, H. Abchiche, R. Koufi, S.Koribeche.
71	Investigation of the Use of Thyme (Thymus Vulgaris) Extract and Rosemary (Rosmarinus officinalis) Extract as a Natural A. Akan Çoban, F.E. Koç, Ç. Kulu
72	Characteristics of microorganisms isolated from meat of different animal species, Kazakhstan Z. Latypova, S. Sarbakanova, N. Yegorova, R. Kerimbaeva, Y. Shakibayev
73	Physicochemical properties of high oleic sunflower oil with herbs S. Minkova, M. Perifanova, K. Nikolova, G. Gencheva, T. Eftimov, A. Pashev
74	Fluorescence spectra and antioxidant activity of juices from dogwood (cornus mas) K. Nikolova, S. Minkova, I. Milkova-Tomova, T. Genova, E. Borisova, P. Radusheva, I. Ivanov, D. Buhalova
75	Effects of Probiotic Administration on Helicobacter pylori Eradication H. Meral, A. Erdoğan, M. Gürses, H. Aktaş
76	Texture Profile Analysis of Quince Waste Emulsion Z. Akşit, H. Gençcelep
77	Dietary Fiber Composition of Tomato, Quınce and Grapefruit Waste Z. Akşit, H. Gençcelep

Posters will be hanged according to the poster numbers.

CONTENTS

CONTENTS ____ *I*

Impact of honey color from Jordanian flora on total phenolics and flavonoids contents and antioxidant activity ____ *1*

Microbial Inoculants in Cabbage Production-Effect on Cabbage Yield and Soil Microbiological Activity ____ *2*

The Increase of Productive Capacity of Acidic Soil By The Applicationo of Microorganism and Liming ____ *3*

Food Safety and Assurance Through Halal Certification: The Malaysian Experience ____ *11*

Development of Schemes for Provided Services of Forest Shelterbelts in Dry Climate ____ *12*

Investigation of Socio-Economic Characteristics of Wheat Producers on Certified Seed Use: The Case of Ankara Province ____ *25*

Contraverses in the determination of antioxidant activity in food and biological samples-from individual determinations to PCA analysis ____ *36*

Antioxidant and Biological Activities of Blackthorn Extracts ____ *37*

A preliminary Study of Micro Element Accumulation of Four Fish Species from North Eastern Mediterranean ____ *38*

Hepatosomatic Index (HSI) and Crude Protein Contents of four Cartilaginous Fish Species from the Northeastern Mediterranean ____ *43*

Extraction of Anthocyanins from Grape Pomace by Using Supercritical Carbon Dioxide ____ *49*

Magnetic Iron Oxide Nanoparticle-Based Nanobiotechnology Applications in Agri-Food Production ____ *50*

Cappadocia Region and Its Traditional Dairy Products ____ *51*

Some Microbiological Properties of Kefir Yogurts Produced by Using Milk Powder and Whey Powder ____ *64*

Effects of Cinnamon on Type-2 Diabetes Mellitus ____ *76*

Effects of carbon dots extracted from sugar beet molasses on the growth of different plants ____ *83*

Nutritive Value And Health Benefits Of The Modified Eggs With Bioactive Components ____ *84*

Tarhana: a source of gluten in the diet and potential methods of producing gluten-free tarhana ____ *85*

Retention of Vitamin B_6 during Different Cooking Methods in Fish and Chicken Meats ____ *86*

Utilization of Different Bean Flour and Rice Flour Combinations in The Gluten-Free Tarhana Formulation ____ *87*

Extracellular Protease Genes in Motile Aeromonas Species Isolated from Oncorhynchus mykiss ____ *88*

Molecular and Phenotypic Characterization of Siderophore Production in Yersinia enterocolitica Isolates from Meat and Milk Products ____ 97

Detection of Genes Involved in Biofilm Formation in Staphylococcus aureus Isolates from Meat and Quantification of Their Biofilm Formation ____ 107

Detection of Beta-Lactamase Genes blaA and blaB and Ampicillin Susceptibility of Yersinia enterocolitica from Food ____ 119

Selective Factors Among the Green Technologies for Extraction of Bioactive Compounds __ 131

The Levels of 5-Hydroxymethylfurfural in Different Kinds of Pekmez ____ 132

Drying Characteristics of Reduced Fat White Cheese Dried by Different Methods ____ 139

The Levels of Organochlorine Pesticides in Milk; The Situation in Turkey ____ 150

Chemical Composition, Biological Activity and Microbial Diversity of Kombucha ____ 156

Total Phenolic Contents, Antioxidant and Antimicrobial Activities of Koruk (Unripe Grape, Vitis vinefera L.) Products ____ 168

Solid-Liquid Solvent Extraction of Carotenoids from Spaghetti Squash (Cucurbita Pepo L.) by Response Surface Methodology ____ 169

Effects of Explosive Puff Drying and Hot Air Drying on Quality Characteristics of Nutritive Pumpkin Chips ____ 170

Effect of seed-to-water ratio, coagulant types and concentration on the yield and physicochemical properties of kenaf (Hibiscus cannabinus L.) seed hard tofu ____ 171

Drying Kinetics and Quality Characteristics of Hot Air Dried Potato cv. Jelly under Different Process Parameters ____ 172

Improvement of Microwave-Vacuum Drying System and Mathematical Modeling of Pear ___ 190

Physicochemical Properties of Gemlik Type Black Olives Obtained from the Market ____ 191

Investigation of the Microbial Profile of Argan, Bergamot, Nigella sativa Seed, Pomegranate Seed and Ginger Oil ____ 192

Optimization of Mucilage Extraction from Chia Seeds ____ 200

The Nutritional Quality of Freshwater Fish of Republic of Moldova ____ 201

Comparison of Polyphenolic Characteristics and Cytotoxic Activities of Fermented Morus alba Cultivars from Turkey ____ 202

Sourdough Bread with Pumpkin Pomace ____ 203

Determination of Some Chemical and Physical Properties of Structured Lipids Produced by Enzymatic Interesterification of Beef Tallow with Corn Oil ____ 204

Nutritional potential characterization and bioactive properties of caper products ____ 205

The Effect of Grape Vinegar on the Some Physicochemical and Textural Properties of Chicken Breast Meat ____ 221

Effect of Mild Temperature-Long Time (MTLT) Treatment on Bioactive Compounds in Peach Juice ____ 229

Incorporation of selected herbal plant extracts to suppress glyceamic impact of cane sugar __ 236

The Effect of Impregnation Pre-treatments on Drying Kinetics of Saffron Milk Cap (Lactarius deliciosus) _____ 237

Determination of Some Sugar Contained Products and Amount of Advanced Glycation Ends Products via High-Performance Liquid Chromatography – Spectrophotometric _____ 245

*Investigation of the availability of image processing as an alternative method to spectrophotometry for prediction of HMF content in honey for different temperatures*_____ 246

Combined Effects of Novel Technologies on Vacuum Impregnation Treatments of Foods ___ 258

Comparison of antioxidant activities ofcarbon dots synthesized from different carbon sources 265

Image Processing Techniques in the Food Applications _____ 267

STEC Survival and Synthetic Gastric Fluid Resistance During Storage of Experimentally Produced Frankfurters _____ 276

Thermal Inactivation of Listeria monocytogenes in İnegöl and Kasap Köfte (Traditional Turkish Meatballs) _____ 284

Effect of Micronutrients on the Bioavailability of Flavonoids _____ 290

Researches on the incidence of pesticide residues in food products on the Romanian market _ 291

Influence of edible coatings on some physicochemical properties of dried banana (Musa cavendish) _____ 302

Production of Probiotic Beverage with Oat Milk Containing Grape Juice Using Lactobacillus rhamnosus _____ 303

How Safe Are Romanian Foods to GMOs Contamination? _____ 313

Effect of Different Harvesting Time on Quality and Phytochemicals in Prickly Pear (Opuntia ficus indica) _____ 314

Potentials and Challenges for Future Development of Milk Production and Industrial Processing in Republic of Benin _____ 315

Association between Skin Pigmentation, Physiological Parameters and Adaptation of Dairy Goats to Environmental Stress _____ 326

Determination of Bioactive Properties of Protein and Pigments Obtained from Spirulina platensis _____ 332

Effect of Pickling on Some Biochemical Properties of Brassica Vegetables: Cabbage, Cauliflower and Broccoli _____ 333

Modelling Effect of Freeze-Thaw Stress on the Growth of Wine Yeasts Isolated From Turkish Region _____ 334

GMOs in the Republic of Moldova. Legislative Framework and Public Perception of Genetically Modified Food _____ 344

Effect of cultivar type and maturation level on sorption isotherms of apricots _____ 355

Expression of Full-Length and Mature α-Amylase from Bacillus sp. in P. pastoris and

Characterization of the Recombinant Enzyme ____ 356

Investigation of anti-fungal activity of encapsulated Saccharomyces boulardii and clove oil emulsion in strawberries at post-harvest stage ____ 357

A New Dehydration Technique: Refractance Window Drying ____ 358

The Effect of Humidification on Germination and Seedling Emergence of Sweet Corn Seeds 374

The Effect of Pre-sown Treatments on Seed Viability and Physiology in Tomato ____ 382

Wheat Starch-Lauric Acid Complexation in the Presence of Bovine Serum Albumin ____ 390

Food Protection With Propolis ____ 396

Effect of Different Diets on Parasitization Performance of Trichogramma spp. (Hym: Trichogrammatidae) ____ 397

Establishment of in vitro clonal cutting production protocol of Laurel (Laurus nobilis L.) __ 403

The Effects of Light Sources and Packaging Forms on Storage Stability of Fresh Beef Meat during Refrigerated Storage ____ 404

The effects of radicle cutting on plant growth and some physiological parameters of bean under drought stress ____ 405

Combine Effects of Drought and Cadmium Stress on Lettuce Seedling ____ 413

Leptin Receptor (LEPR) Gene Polymorphism in Some of the Donkey Populations of Turkey 432

Detecting of 3-MCPD in edible oil by Near Infrared Spectroscopy (NIR) ____ 433

Investigation of Potential Use of By-products from Cold Press Industry as Natural Fat Substitutes and Functional Ingredients in a Low Fat Salad Dressing ____ 441

Structures Features of Dietary Fibers of Turkish Hazelnut (Corylus avellana L.) and Hazelnut Skin ____ 455

The Effect of Different Extraction Techniques on Color Values of Peach Pomace ____ 456

The Effect Synthetic Antioxidants on the Oxidative Stability of Sunflower and Corn Oils ___ 463

The Changes in Quality Criteria of Some Edible Oils During Frying ____ 468

Extraction, Processing and Functional Properties of Pistachio Oil ____ 474

The Effect of Continuous System Ultraviolet Light Application on the Quality of Yoghurt with Surface Cream ____ 478

Chemical Investigation and Biological Activities of the Lamiaceae Plant: Thymus fallax ____ 479

Processing, Usage and Functional Properties of Peanut Oil ____ 480

Impact of Environmental and Host-Induced Stress on Pathogenesis, Disease, and Microbial Detection ____ 484

Rainfall Harvest: Example Of Nevşehir Hacı Bektaş Veli University ____ 485

Site Specific Poultry Manure Recommendation For Cucumber (Cucumis Sativus L.) And Its Effect On The Fertility Of An Ultisol After Three Years' Continuous Application ____ 491

Optimization of oil body isolation from pomegranate seeds ____ 505

Method of determination of water-soluble protein in Bulgarian semi-hard yellow cheese ____ 506

Production Method and Some Properties of Kolot Cheese ____ 515

Impact of Ultrasonic Frequencies on Phlorotannin Content of Seaweeds ____ 519

Effects of Salt Substitue on Mineral Contents of Circassian Cheese During Storage ____ 520

Biological Control of Fusarium graminearum and Sclerotinia homoeocarpa F.T. Benn. on Turfgrass ____ 529

Monitoring of microbial changes during incubation in the yoghurts prepared with different culture concentrations by DNA melting curves ____ 530

Investigation of microbial changes of yoghurts prepared with different culture concentrations by molecular and classical methods during storage ____ 540

Phylogenical and Serological Discrimination of Sharka Disease at East Mediterranean Region of Turkey ____ 551

Mapping Distribution of Soil Quality Parameters and Indexes Using Geostatistical Methods in The Harran Plain ____ 561

Fungicides Usage Status and Current Problems of Growers in Sanliurfa Province ____ 567

Effect of Different Harvest Periods on Phenolic Compounds and Some Important Quality Parameters of Kırmızı Pistachio Variety ____ 568

Silage Additives ____ 569

The Phenolic Composition and Antioxidant Activities of Red Beetroots ____ 570

LC-DAD-ESI-MS/MS characterization of elderberry flower (Sambucus nigra) phenolics extracted with various solvents ____ 580

Cold Storage of O'Gosho Persimmon ____ 581

D-Tagatose 3-Epimerase Enzyme Production For Converting D-Fructose Into D-Allulose ____ 590

Comparison of Different Sniffing Techniques Used in Determination of Aroma Active Compounds in Foods ____ 591

Effects of matrix composition on perception of strawberry flavour in model dairy gels ____ 600

Volatile Composition of Althaea officinalis L. Flowers ____ 601

GC-MS-Olfactometric Characterization of Key Odorants in Pine Honey from Two Different Regions of Turkey ____ 602

Assessment of Representativeness of Aromatic Extracts for Aroma Characterization: A study of Caper ____ 603

Determination of Agronomic Properties Varieties of Linens (Linum usitatissimum L.) Planted on Different Sowing Times ____ 604

Effect of Geographic Conditions on Pine honey Carbon Isotope Value, Texture and Color Properties ____ 609

Cutting Force and Energy Requirement of Boğazkere Grape (Vitis vinifera l.) Cane _____ 610

*The Effect of the Addition of Different Concentrations of Four Hydrocolloids on Sensory Properties of Strawberry Jam*_____ 628

Effect of Photoselective Nets on Harvest Quality and Physicochemical Characteristics of apples cv.'Fuji' _____ 629

Comparative Analysis of Juice Volatiles in Selected Mandarins (Owari, Mihowase Satsumas and Hernandina, Nules Clemantines) Grown Under Mediterranean Ecological Conditions _____ 630

Effects of 1-Methylcyclopropene (1-MCP) Applications on Storage and Quality Characteristics of Santa Maria Pear Fruit _____ 631

Active Modified Atmosphere Pallet Cover Treatment Effects on Storage and Shelf Life Quality of Strawberry _____ 632

*Effects of Semperfresh Applications on Storage and Quality Characteristics of Santa Maria Pear Fruit*_____ 633

The General Microflora and Identification of Coliform Group Bacteria from The Yoghurt Marketted in Adana - TURKEY _____ 634

Nanoengineering in Agriculture and Food Science _____ 635

*Long Lasting Sanitation of Postharvest Storage Areas by using Sol Gel Chemistry*_____ 636

*A Traditional Food: Kefir*_____ 638

A Traditional Fermented Food: Kumiss _____ 639

*Drying Kiwi Fruit by Osmotic Dehydration*_____ 640

Physico-chemical Characteristics of Some Strawberry (Fragara ananassa, L.) Cultivars Grown in Adana/Turkey _____ 641

AGROFOOD
20 - 21 June 2019, Istanbul

The Effect of Grape Vinegar on the Some Physicochemical and Textural Properties of Chicken Breast Meat

Kübra ÜNAL[1], Alime CABİ[11], Eda ALAGÖZ[1], Cemalettin SARIÇOBAN[1]

[1] Department of Food Engineering, Selcuk University, TURKEY

ABSTRACT

The aim of this study was to determine the effect of grape vinegar on the physicochemical and textural properties of chicken breast meat. In this study, chicken breast meats were separately treated with 0.1 M, 0.2 M acetic acid solution (A1, A2), 50%, 100% grape vinegar solution (V1, V2) for 48 hours at 4 °C. For all treatment groups, cooking loss, water retention capacity, marinate absorption, texture profile analysis and Meullenet-Owens Razor Shear (MORS) analysis were performed. Grape vinegar treatment decreased the pH value of samples compared to the control group and chicken breast marinated with acetic acid. Although the cooking loss (%) data of chicken breast meat samples treated with acetic acid and grape vinegar decreased significantly ($p<0.05$), the water holding capacity values were not significantly affected ($p>0.05$). *L**, *a** and *b** values of the samples decreased as a result of treatment with grape vinegar. When the texture profile results were examined, the lowest hardness (80.24 N) was determined in the G1 group. According to the control group, the results of the shear force (MORS) of chicken breasts treated with acetic acid and grape vinegar were lower.

Keywords: Acetic acid, Chicken breast meat, Texture, Grape vinegar.

[1] *Corresponding author*;
alimeyaldiz@gmail.com, (+90) 536 815 8347

1. INTRODUCTION

In the poultry industry, there has been a significant increase in the consumption of boneless breast meat. Along with changing animal breeding conditions to meet increased white meat demand, it can affect the tenderness of meat as an important parameter for consumer acceptability (Owens et al., 2004).

Tenderness, juiciness, flavor and color are among the basic quality parameters that influence the consumer's decision to buy meat (Barbanti and Pasquini, 2005). Meat tenderization methods can be broadly classified as electrical, mechanical, enzymatic and chemical interventions (Bhat et al., 2018). Chemical interventions carry out by salts, phosphates and organic acids can be incorporated in meats through injection, marination or immersion (Berge et al., 2001; Bhat et al., 2018). With the help of these processes, some changes may occur in the appearance and texture of the meat (Jayasooriya et al., 2007). Acidic marination (Lewis and Purslow, 1991; Burke and Monahan, 2003), which is carried out by dipping the meat into vinegar, wine or juice solution, is also widely applied. Many studies have shown that low muscle pH after marination has a positive effect on the texture of the meat and water holding capacity causes an increase in moisture content and a decrease in cooking loss (Burke and Monahan, 2003; Aktaş et al., 2003; Oreskovich et al., 1992, Ergezer and Gokce, 2011).

In this study, the effects of different concentrations of acetic acid and grape vinegar on the physicochemical and textural properties of marinated chicken breasts were investigated.

2. MATERIAL AND METHODS

2.1. Sample preparation

Chicken breasts and vinegar used as materials were obtained from the local market in Konya, Turkey. The chicken breasts were cleaned and cut into pieces approximately 4 cm thick, perpendicular to each muscle. Chicken breasts were divided into 5 groups as following; 0.1 M acetic acid (A1), 0.2 M acetic acid (A2), 50% grape vinegar (V1), 100% grape vinegar (V2) and only pure water was added to the 1000 ml solution containing the control group (K) for 48 hours. 4 ºC. For the texture profile analysis, all samples were cooked until the internal temperature reached 72 ºC.

2.10Methods

The pH values of the chicken meat samples were determined separately with the help of pH meter (Testo 205 pH Temperatur-Messgerat, AG Postfach 1140, 79849, Lenzkirch) (Lambooij et al., 1999). Cooking losses of marinated and cooked samples and marinate absorption of uncooked samples (%) was determined by Young and Buhr (2000). The centrifugation method was used to determine the water holding capacity of the samples. 2 g of homogenized chicken breast meat samples were weighed on filter paper (W1) and placed in centrifuge tubes. After centrifugation at 2000 rpm for 10 min, the wet filter paper was weighed (W2). The wet filter paper was dried at 60 °C to a constant weight (W3). Water holding capacity was calculated as the amount of sample remaining after centrifugation (Lakshmanan et al., 2007).

Color measurements of raw and cooked chicken meat samples (L *, a * and b * values) were carried out using a Chrometer (CR-400 model, Konica Minolta, Osaka, Japonya) with D65 illumination, Diffuse / O mode with 2 ° observer and 8 mm illumination range. *L** (brightness), *a** (redness, +60, red; ─60, green) and *b** (yellowness, +60, yellow; ─60, blue) color coordinates has

been identified according to color coordinates of CIE $L^* a^* b^*$ color coordinate system (Honikel, 1998).

Texture Profile Analysis of marinated chicken meat samples were carried out at room temperature using the Texture Analyzer (TA.HD plus Texture Analyzer, UK). Conditions applied for TPA; 50 N load cell, pre-test speed of 1 mm / min, test speed and test speed 5 mm / min, probe diameter 36 mm (Modı et al., 2009). For the Meullenet-Owens Razor Shear analysis, the Meullenet-Owens Razor Shear probe connected to the TA.HD plus texture analyzer was used (Sawyer et al., 2007). The assay probe was immersed in 3 different regions of each breast meat. 50 N load cell, pre-test speed of 2 mm / min, test speed and speed after test 10 mm / min.

The data obtained from the study were subjected to variance analysis. The significance levels between variance analyzes and averages were performed using the MINITAB (Windows Release 16® MINITAB, 2000) package program.

3. RESULTS AND DISCUSSION

3.1. Technological properties

Table 1 shows that the pH values of chicken breasts treated with different concentrations of acetic acid solution and grape vinegar. The pH of the samples decreased with the addition of acetic acid and grape vinegar ($p<0.01$). The highest pH value (5.66) belonged to the control group while the lowest pH (3.77) was observed in V2. Ke et al. (2009) investigated the effect of marinated beef with 10 mM citric acid solution on tenderness. It has been reported that the pH value after the marination with citric acid solution has decreased rapidly from 5.35 to 3.52. In another study, turkey breast meat samples were treated with acidic fruit and vegetable juices. The pH value of turkey breasts was initially 6.18, while the pH value is between 5.05 and 6.03 after 24 hours of marination with acidic fruit and vegetable juices. After 48 hours of marination, the pH value of the chicken meat was found between 5.18 and 6.19. It is stated that the pH value of the marinas used in the marinating process is reflected in the turkey breast meat (Bor, 2011). In a study by Ergezer (2003), turkey breasts were treated with tapering method with 0.5% lactic acid + 2% NaCl, 1% lactic acid + 2% NaCl, 0.5% lactic acid + 3% NaCl solutions. It was stated that the pH of marinated turkey breasts decreased compared to pre-marination and the most decrease observed in this application was caused by 0.5% lactic acid + 3% NaCl solution which decreased the pH from 6.11 to 4.49. Also, Obuz and Cesur (2009) reported that the pH values of chicken breast meat samples decreased with pomegranate juice. Similarly, the reason for the low pH values of the samples in our study is due to the use of acidic solutions.

The cooking loss (%) values of all samples are given in Table 1. Cooking values of samples treated with acid solution and grape vinegar are lower than the control group ($p<0.01$). The loss of cooking (%) of the samples increased with acetic acid and grape vinegar treatment, but the loss of cooking increased with concentration in the solutions. Minimum cooking loss (17.57%) occurred in chicken breast meat treated with grape vinegar (V1) at a concentration of 50%.

Aktaş et al. (2003), marinated beef with lactic acid and citric acid solution in 0.5%, 1% and 1.5%. The lowest cooking loss was observed in samples marinated at the highest concentration of lactic and citric acid. They stated that this might be due to the strong effect of low pH on proteins.

It is stated that water holding capacity (WHC) is very important in meat quality, affected by many factors including pH of solution and solution used in the marination (Carroll and Cesur, 2009;Yusop et al., 2010). Table 1 shows water holding capacity of chicken breast meat treated with acetic acit solition and grape vinager. The highest WHC was chicken breasts (27.34%, 28.66%) treated with 0.1 M and 0.2 M acetic acid. The sample containing 100% grape vinegar showed higher water holding

capacity than the control group. Although the water holding capacity increased with the increase in the concentration of acetic acid and grape vinegar, the difference between them was not statistically significant (p> 0.05).

Uptake of marinade in chicken breast meats is given in Table 1. Uptake of marinade increased with acetic acid solution and grape vinegar treatment (p<0.01). The highest Uptake of marinade (40.52%) occurred in the sample treated with 100% grape vinegar. The marinate absorption of the control group was 4.40%. A significant difference was observed between these two groups (p <0.01).

Tablo 1. Effect of different concentrations of acetic acid and grape vinegar on pH, water holding capacity, cooking loss and uptake of marinade of chicken breast meat

Treatment	pH	Water holding capacity (%)	Cooking loss (%)	Uptake of marinade (%)
K	5.66±0.04^{a}	20.66±3.10^{a}	37.81±0.04^{a}	4.40±0.56^{d}
A1	4.93±0.28^{ab}	27.34±4.02^{a}	22.44±0.18^{b}	5.09±0.01^{d}
A2	4.14±0.04^{bc}	28.66±5.89^{a}	25.72±0.19^{ab}	20.69±0.98^{c}
V1	3.84±0.16^{c}	16.62±0.40^{a}	17.57±0.22^{b}	25.84±0.74^{b}
V2	3.77±0.13^{c}	21.95±2.89^{a}	20.43±0.22^{b}	40.52±1.19^{a}

$^{a-d}$ p<0.05 Means within columns with different superscript letters are significantly different

K:control, A1: 0.1 M treatment with acetic acid solution, A2: 0.2 M treatment with acetic acid solution, V1: %50 treatment with grape vinegar solution, V2: %100 treatment with grape vinegar

Burke et al., (2003); stated that the liquid uptake with the marination process could cause an increase in the weight of all samples. In a study by Ke et al. (2009), the uptake of marinade of beef dipped in 10 Mm citric acid solution was 33.6%. Serdaroğlu et al., (2007) found that the uptake of marinade of chicken breast meat treated with 100% grapefruit juice and 0.2 M citric acid was higher than other groups (50% grapefruit juice; 0.05,0.1 M citric acid; control). The data obtained from our study is similar to the literature.

3.2. Color results

The color changes of marinated chicken breasts are given in Table 2.

Tablo 2. *L* *, *a* * and *b* * values of raw and cooked chicken breast meats treated with different concentrations of acetic acid and grape vinegar

	Treatment	*L**	*a**	*b**
Raw	K	62.48±0.02^{a}	0.83±1.25^{a}	7.20±0.69^{a}
	A1	61.80±0.31^{a}	0.16±1.35^{a}	8.36±0.16^{a}
	A2	57.09±2.32^{ab}	-0.32±0.62^{a}	3.24±0.06^{a}
	V1	52.86±2.16^{b}	-0.44±0.00^{a}	6.60±0.89^{a}
	V2	53.61±0.18^{b}	-1.05±0.04^{a}	8.85±0.60^{b}
Cooked	K	76.76±0.54^{a}	1.64±1.33^{a}	18.53±1.18^{b}
	A1	67.17±1.74^{bc}	1.71±0.19^{a}	23.30±0.89^{a}
	A2	72.41±1.98^{ab}	0.27±1.99^{a}	18.18±0.87^{b}
	V1	71.31±1.33^{ab}	0.24±0.32^{a}	16.76±0.66^{b}
	V2	65.12±0.59^{c}	0.68±0.64^{a}	16.04±0.53^{b}

$^{a-c}$ p<0.05 Means within columns with different superscript letters are significantly different

K:control, A1: 0.1 M treatment with acetic acid solution, A2: 0.2 M treatment with acetic acid solution, V1: %50 treatment with grape vinegar solution, V2: %100 treatment with grape vinegar

After marinating, significant changes in *L* * values of raw and cooked chicken breasts (p<0.01). lightness (*L**) of the raw and cooked samples reduced by treatment with acetic acid and

grape vinegar .This may be due to the color of the vinegar used. No significant differences were observed in the changes in *a** value of both raw and cooked chicken breasts after marinating ($p>0.05$). The lowest *b* * value (3.24) was determined in raw chicken breast meat treated with 0.2 M acetic acid. In the cooked samples, the highest *b* * value occurred in chicken meat treated with 0.1 M acetic acid solution (Table 2). Serdaroğlu et al. (2007) reported that the difference between the *a** values of the samples treated with citric acid was statistically insignificant. Ergezer and Gökçe (2011) and Nadzirah et al. (2016) reported that *L* * and *b* * values increased and *a** decreased when samples marinated with different types of marinates. Smith and Young (2007) stated that the decrease in brightness values of chicken breast fillets marinated. Northcutt et al. (2000) reported that there was no statistically significant difference between the brightness values of unmarinated and marinated raw and cooked chicken fillets. In general, it has been observed that the color from fruit, vegetable or organic acid affects the color properties of the meat.

3.3. Texture Profile Analysis Results

Texture profile analysis of the samples treated with acetic acid and grape vinegar is given in Table 3. According to the results of the analysis, a significant difference was observed between the values of hardness (N), cohesiveness and shear force (MORS) of the samples ($p<0.05$). Gök and Bor (2016) found that the hardness, adhesiveness (gxs) and cohesiveness values were statistically significant in samples treated with fruit and vegetable juices. The treatment of acetic acid and grape vinegar also decreased the shear force (MORS) value of chicken breast meat compared to the control group.

Table 3. Texture analysis parameters of chicken breast meats treated with different concentrations of acetic acid and grape vinegar

Treatment	Hardness (N)	Gumminess (N)	Cohesiveness	Chewiness (Nxmm)	Shear Force (MORS)
K	123.30±17,10^{ab}	33.35±8.46^{a}	0.55±0.01^{b}	18.61±5.23^{a}	9.70±0.60^{b}
A1	134.18±2,16^{a}	42.97±6.51^{a}	0.60±0.01^{ab}	25.90±4.60^{a}	9.32±0,76^{b}
A2	108.10±23.80^{ab}	40.70±17.20^{a}	0.52±0.04^{ab}	20.96±7.17^{a}	8.66±0,38^{b}
V1	80.24±0,99^{b}	43.39±3.72^{a}	0.65±0.07^{a}	28.14±4.77^{a}	12.58±0.28^{a}
V2	92.44±2,18^{ab}	41.47±10.34^{a}	0.59±0.07^{ab}	28.70±4.15^{a}	8.46±0.02^{b}

$^{a-b}$ $p<0.05$ Means within columns with different superscript letters are significantly different
K:control, A1: 0.1 M treatment with acetic acid solution, A2: 0.2 M treatment with acetic acid solution, V1: %50 treatment with grape vinegar solution, V2: %100 treatment with grape vinegar

In our study, hardness values of chicken meat samples were determined between 80.24 - 134.18 N. Both concentrations of acetic acid and grape vinegar significantly reduced the hardness of chicken breasts ($p<0.05$). This decrease was approximately 34.92% compared to the control group. However, the hardness of chicken breast treated with 0.1 M acetic acid solution was higher than the control group. Serdaroğlu et al. (2007) reported that their citric acid and grape juice solutions reduce the hardness data of turkey meat samples. Cohesiveness values increased by 0.1% acid solution and 50% 100% grape vinegar. Goli et al. (2014) observed that the decrease in the hardness values of turkey breast meat treated with 0.25 M acetic acid solution and an increase in the cohesiveness values occurred. In another study in which wild boar and deer meat were ripened with lemon, pineapple

juice, red wine and kefir, it was determined that the marination process decreased the hardness and gumminess (Żochowska-Kujawska, 2012). It has been reported that acidic solutions weaken the meat structure due to proteolytic enzyme activity and organic acids change the texture of meat depending on pH (Önenç et al.,2004).

4. CONCLUSION

In this study, technological and textural properties of chicken breast meat treated with different concentrations of acetic acid solution (0.1 M, 0.2 M) and grape vinegar (50%, 100%) for 48 hours were investigated. Thus, it has been investigated whether grape vinegar can be used as a natural alternative in marination process. According to the results, it can be suggested that grape vinegar treatment positively improves the technological and textural properties of chicken breasts, especially the grape vinegar treatment at a concentration of 50% can be a natural alternative source for tenderness.

REFERENCES

Aktaş, N., Aksu M.I., Kaya, M. 2003. The effect of organic acid marination on tenderness, cooking loss and bound water content of beef, Journal of Muscle Foods, *14*(3), 181-194.

Barbanti, D., Pasquini, M. 2005. Influence of cooking conditions on cooking loss and tenderness of raw and marinated chicken breast meat. Lebensmittelwissenschaft , 38 (8), 895-901.

Berge, P., Ertbjerg, P., Larsen, L. M., Astruc, T., Vignon, X., & Møller, A. J. (2001). Tenderization of beef by lactic acid injected at different times post mortem. Meat science, 57(4), 347-357.

Bhat, Z. F., Morton, J. D., Mason, S. L., & Bekhit, A. E. D. A. (2018). Applied and emerging methods for meat tenderization: A comparative perspective. Comprehensive Reviews in Food Science and Food Safety, 17(4), 841-859.

Bor, Y., Application of some natural antioxidant sources on marination of turkey meat, Master Thesis, Kocatepe University, İnstitute of Science, Afyonkarahisar, 2011, 30.

Burke, R.M., Monahan, F.J. 2003.The tenderisation of shin beef using a citrus juice marinade. Meat Science, 63(2), 161-168.

Carroll, C. D., Alvarado, C. Z., Brashears, M. M., Thompson, L. D., & Boyce, J. 2007. Marination of turkey breast fillets to control the growth of Listeria monocytogenes and improve meat quality in deli loaves. Poultry science, 86(1), 150-155.

CIE.International Commission on Illumination, Colorimetry: officialrecommendations of the International Commission on Illumination. Publication CIE No.15 (E-1.3.1) Paris, France: Bureau Central de la CIE. 1976.

Ergezer, H., Gokce, R. 2011. Comparison of marinating with two different types of marinade on some quality and sensory characteristics of Turkey breast meat, Journal of Animal and Veterinary Advances, 10(1), 60-67.

Ergezer, H., Chemical, microbiological, textural and sensory properties of marinated poultry meats with different methods, Master Thesis, Pamukkale University, İnstitute of Science, Denizli 2003, 49.

Goli, T., Ricci, J., Bohuon P., Marchesseau S., Collignan A. 2014. Influence of sodium chloride and pH during acidic marination on water retention and mechanical properties of turkey breast meat Meat science; 96(3), 1133-1140.

Gök, V. and Bor, Y., 2016. Effect of marination with fruit and vegetable juice on the some quality characteristics of turkey breast meat, Brazilian Journal of Poultry Science, 18(3), 481-488.

Honikel, K.O., 1998. Reference methods for the assessment of physical characteristics of meat. Meat Science, 49(4), 447-457.

Jayasooriya, S.D., Torley, P.J., D'Arcy B.R., Bhandari, B.R. 2007. Effect of high power ultrasound and ageing on the physical properties of bovine Semitendinosus and Longissimus muscles, Meat Sci, 75, 628-639.

Ke, S., Huang, Y., Decker, E.A., Hultin, H.O. 2009. Impact of citric acid on the tenderness, microstructure and oxidative stability of beef muscle. Meat Science, 82(1), 113-118.

Lakshmanan R., Parkinson J.A., Piggott, J.R. 2007. High-pressure processing and water-holding capacity of fresh and cold-smoked salmon (Salmo salar), LWT-Food Science and Technology, 40 (3), 544-551.

Lambooij, E., Potgieter, C.M., Britz, C.M., Nortje, G.L., Pieterse, C., 1999, Effects of electrical and mechanical stunning methods on meat quality in ostriches, Meat Science, 52, 331–337.

Lewis, G.J., Purslow, P.P. 1991. The effect of marination and cooking on the mechanical properties of intramuscular connective tissue. Journal of Muscle Foods, 2, 177–195.

Modı V.K., Yashoda, K.P., Naveen, S.K. 2009. Effect of carrageenan and oat flour on quality characteristics of meat kofta, International Journal of Food Properties, 12.1, 228-242.

Nadzırah, K., Zaınal, S., Norıham, A., Normah, I. 2016. Application of Bromelain Powder Produced from Pineapple Crowns in Tenderising Beef Round Cuts. International Food Research Journal, 23, (4).

Northcutt, J.K., Smith, D.P., Buhr, R.J. 2000. Effects of bruising and marination on broiler breast fillet surface appearance and cook yield. Journal of Applied Poultry Research, 9, 21-28.

Obuz, E., Cesur, E. 2009. Effects of marinating on different properties of chicken breast meat: treatment of samples with sour cherry, pomegranate, orange, grape or apple juice. Fleischwirtschaft, 89(3), 95-99.

Oreskovich, D.C., Bechtel, P.J., McKeith, F.K., Novakofski, J., Basgall, E.J. 1992. Marinade pH affects textural properties of beef. Journal of food science; *57*(2), 305-311.

Owens, C.M, Cavit, L.C., Meullenet, J.F.C. 2004. Tenderness evaluation in poultry meat, In Proceeding of the 57th American Meat Science Association, Reciprocal Meat Conference, 115-121.

Önenç, A., Serdaroğlu, M., Abdraımov, K., 2004. Effect of Various Additives to Marinating Baths on Some Properties of Cattle Meat. European Food Research and Technology, 218 (2), 114-7.

Sawyer, J.T., Baublits, R.T., Apple, J.K., Meullenet J.F., Johnson, Z.B., Alpers, T.K. 2007. Lateral and logitudinal characterizationof color stability, instrümental tenderness, and sensory characteristic in the beef semimembranosus, Meat Sci., 75, 575-581.

Serdaroğlu M., Abdraımov, K., Onenc, A. 2007. The Effects of Marinating with Citric Acid Solutions and Grapefruit Juice on Cooking and Eating Quality of Turkey Breast, Journal of muscle foods, 18 (2), 162-72.

Smith, D.P., Young, L.L. 2007. Marination pressure and phosphate effects on broiler breast filet yield, tenderness, and color. Poultry Sciene, 86, 2666- 2670

Young, L. L. and Buhr, R. J., 2000. Effect of Electrical Stimulation and Polyphosphates Marination on Drip From Early-Harvested Individually Quick-Frozen Chicken Breast Fillets, Poultry Science, 79, 925-927.

Yusop, S.M., O'Sullivan, M.G., Kerry, J.F., Kerry J.P. 2010. Effect of marinating time and low pH on marinade performance and sensory acceptability of poultry meat, Meat science, *85*(4), 657-663.

Żochowska-Kujawska, J., Lachowicz, K., Sobczak, M. 2012. Effects of fibre type and kefir, wine lemon, and pineapple marinades on texture and sensory properties of wild boar and deer longissimus muscle, Meat science, *92*(4), 675-680.

View publication stats