

## CURRICULUM VITAE



### PERSONAL DATA

**Name :** Ahmet Yemeniciođlu  
**Date and Place of Birth:** December 31,1972  
Nicosia-Cyprus  
**Current Address :** İzmir Institute of Technology  
Department of Food Engineering  
35437 Gülbahçe Köyü, Urla , İzmir  
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### EDUCATION AND DEGREES

**1990-1994** B.S., Ankara University, Faculty of Agriculture, Department of Food Engineering.  
**1994-1996** M.S., Ankara University, Faculty of Agriculture, Department of Food Engineering.  
**1996-1998** PhD., Ankara University, Faculty of Agriculture, Department of Food Engineering.  
**2002-2008** Associate Professor, Izmir Institute of Technology, Department of Food Engineering  
**2008-** Full Time Professor, Izmir Institute of Technology, Department of Food Engineering

### HONORS

**1990** Science encouragement award for young scientists of future  
From The Scientific and Technical Research Council of Turkey  
**1990-1994** B.S., Graduated at the first place  
**1997-1998** Ankara University's Annual Science Encouragement Award  
**1999** Youngest Associate Professor of Food Science in Turkey at the age of 27  
**2000-2001** Ankara University's Science Award by the University Senate  
**2013** The Scientific and Technical Research Council of Turkey selected his project entitled "Development of composite or blend edible food packaging materials for controlled release of

bioactive substances” to be published in the success stories catalogue of The Ministry of Science, Industry and Technology

**2013**

His project “Production of value-added protein isolates suitable for food, drug and cosmetics industry using hazelnut meal” became the number one project among four hundred projects and won the great price in the second International Food Research and Development Projects Market Organized by Turkish Exporters Assembly

### **ACADEMIC POSITIONS**

- Founding director of Biotechnology and Bioengineering Research and Applications Center at Izmir Institute of Technology (2007-2013)
- Head of Department of Food Engineering in Izmir Institute of Technology, Turkey (2013-2018)
- Director of Chemical Waste Disposal Unit in Izmir Institute of Technology (2008-2013)

### **SELECTED MAJOR LARGE SCALE PROJECTS INVOLVED**

“Biotechnology and Bioengineering Research Center” DPT Project no: 2007K121040. Project director. (completed).

“Production of functional packaging materials by use of biopreservatives” Funded by the The Scientific and Technical Research Council of Turkey. Project # MİSAG 221. Project director (completed).

“Development of edible films having antimicrobial characteristics by using lactic acid bacteria, lysozyme and lactoperoxidase, applications to plastic packaging materials and to various foods” The Scientific and Technical Research Council of Turkey. Project # MAG 104 M 386. Researcher (completed).

“Preparation and characterization of enzyme immobilized membranes. Modeling of the performances” PIA Bosphorus project between Turkey and France. The Scientific and Technical Research Council of Turkey. Project #: 105 M 325. Researcher (completed).

“Development of composite or blend active edible food packaging materials for controlled release of bioactive substances” Funded by The Scientific and Technical Research Council of Turkey. Project # 108353. Project director (completed).

“Production of pectin from wastes, byproducts and low grade products from sun-dried fig processing: optimization of pectin extraction and characterization of its molecular, functional and health benefits. The Scientific and Technical Research Council of Turkey. Project # 1180372. Project director.(Completed).

### **RESEARCH INTERESTS**

- Biochemical changes in fruits and vegetables
- Natural Food Hydrocolloids (Isolation, characterization, functionality, health benefits)
- Development and application of active edible packaging materials
- Isolation and characterization of food enzymes
- Food applications of antimicrobial enzymes (Biopreservation)
- Value added products from agro-industrial wastes

## **LABORATORY**

Director of Food Chemistry/Biochemistry laboratory at Izmir Institute of Technology

## **COURSES**

- . Advanced Food Biochemistry (Graduate course)
- . Enzyme Characterization and Kinetics (Graduate course)
- . Advanced Food Chemistry (Graduate course)
- . Heat treatment and thermal processing of foods (Graduate course)
- . Food Technology (Under Graduate course)
- . Introduction to Food Engineering (Under Graduate course)

## **JOURNAL REVIEWS (over 200 SCI review reports)**

International Journal of Food Science and Technology (+100 reports, +18 years)

Journal of Agricultural and Food Chemistry

Journal of Food Engineering

Journal of Food Science

Journal of Food Packaging and Shelf Life

Food Chemistry

Food Bioscience

Food Research International

Food Hydrocolloids

Journal of Membrane Science

Packaging Technology and Science

Scientia Horticulturae

International Journal of Food Sciences and Nutrition

Innovative Food Science and Emerging Technologies

Journal of Food Processing and Preservation

Journal of Food Composition and Analysis

Journal of The Science of Food and Agriculture

Process Biochemistry

Journal of Food Biochemistry

Turkish Journal of Biology

Turkish journal of Agriculture and Forestry

**IMPACT:** Google scholar citations: 3729, h-index: 33, i10-index: 53 (Feb 2023)

## **EDITORSHIP**

-Frontiers in Nutrition, Section: Nutrition and Food Science and Technology, Frontiers, Swiss (Associate Editor, 2022- ).

## **SPECIAL ISSUES**

-Frontiers in Nutrition, Frontiers, Swiss (Associate Editor, 2022- ). Special issue title: Recent Advances in Overcoming Sensory Problems of Natural Phenolic Compounds.

-Sustainability, MDPI, Swiss (Guest Associate Editor, 2022- ). Special issue title: Securing Our Future with Sustainable Food Technologies.

- Frontiers in Nutrition, Frontiers, Swiss (Guest Associate Editor, 2021-2022). Special issue title: Antimicrobial Enzymes: Advanced Methods and Strategies for Current and Novel Food Applications

-International Journal of Food Science and Technology, Wiley, UK (Guest Associate Editor, 2019-2020). Special issue title: Natural hydrocolloids in the food sector – Recent applications beyond conventional uses

### **SELECTED SCIENTIFIC ACTIVITIES**

- Evaluator: Czech Academy of Sciences, Oriented Institutes of the Czech Academy of Sciences (2020)
- Turkish Journal of Agriculture and Forestry, TÜBİTAK (Guest Associate Editor, 2011)
- Project Evaluator: European Union Horizon 2020, Call: ERA SUSFOOD2 (2018)
- Project Evaluator Fondazione Cariplo (Italy), Call: Integrated Research on Industrial Biotechnologies and Bioeconomy (2015)
- PhD Thesis Evaluator: Indian Institute of Technology (India) (2014 and 2015)
- Scientific Expert: Ministero dell'Istruzione dell'Università e della Ricerca (MIUR, Italy) Registered Scientific Expert of MIUR in Fundamental Research, Applied Science and Scientific Popularization.
- Msc Thesis correlator: DeFENS, Department of Food, Environmental and Nutritional Sciences, Packaging Division – University of Milan, Italy (2014-2015)

### **RESEARCH ARTICLES PUBLISHED IN PEER REVIEWED JOURNALS**

#### **FOOD BIOCHEMISTRY (ENZYME CHARACTERIZATION AND KINETICS)**

Yemenicioğlu, A., Özkan, M., Cemeroglu, B. 1997. Heat inactivation kinetics of apple polyphenol oxidase and activation of its latent form. *J. Food Sci.* 62:508-510.

Yemenicioğlu, A., Özkan, M., Cemeroglu, B. 1998 Thermostabilities of peroxidases from fresh pinto beans (*Phaseolus vulgaris*). *J. Food Sci.* 63:987-990.

Yemenicioğlu, A., Özkan, M., Cemeroglu, B. 1998. Partial purification and thermal characterization of peroxidase from okra (*Hibiscus esculentum*). *J. Agric. Food Chem.*46:4158-4163.

Yemenicioğlu, A., Özkan, M., Velioglu, S., Cemeroglu, B. 1998. Thermal inactivation kinetics of peroxidase and lipoxygenase from fresh pinto beans (*Phaseolus vulgaris*). *Z. Lebensm. Unters. Forsch.* 206:294-296.

Yemenicioğlu, A., Özkan, M., Cemeroglu, B. 1998. Heat inactivation kinetics of pectin methylesterase from orange and grapefruit peels- Peroxidase as an indicator of peel blanching. *Fruit Processing* 4:158-161.

Yemenicioğlu, A., Cemeroglu, B. 1998. Hale Haven seftalilerinde polifenol oksidaz enzimlerinin bazı nitelikleri (Characteristics of polyphenol oxidase in Hale Haven peaches) *Turkish Journal of Agriculture and Forestry.* 22:261-265.

Yemenicioğlu, A., Cemeroglu, B. 1999. Separation and thermal characterization of ionically and tightly cell wall bound pectin methylesterase (PME) from cucumbers (*Cucumis sativus*). *Z. Lebensm. Unters. Forsch.* 208 (5-6) :369-372.

Yemenicioğlu, A., Ercan R.1999. The change of in situ lipoxygenase during processing to semolina and macaroni. *Adv. Food Sci.* 21(3/4) :84-87.

Yemenicioğlu, A., Özkan, M., Cemeroglu, B. 1999. Some characteristics of polyphenol oxidase and peroxidase from taro (*Colocasia antiquorum*). *Turkish Journal of Agriculture and Forestry.* 23:425-430.

Yemenicioğlu, A. 2002. Control of polyphenol oxidase in whole potatoes by low temperature blanching. *Eur. Food Res. Tehnol.* 214:313-319.

Yemenicioğlu, A., Cemeroglu, B. 2003. Consistency of polyphenol oxidase thermostability in ripening apricots (*Prunus armeniaca* L.) : Evidence for the presence of TS-PPO forming and destabilizing mechanisms in apricots. *J Agric Food Chem.* 51:2371-2379.

Demirbükler, D., Simsek S., Yemenicioğlu A. 2004. Potential application of hot rehydration alone or in combination with hydrogen peroxide to control pectin methylesterase activity and microbial load in cold stored intermediate moisture sun-dried figs. *J. Food Sci.* 69:170-178.

Güçbilmez, Ç.M., Yemenicioğlu, A. 2007. Partial purification and preparation of bovine lactoperoxidase and characterization of kinetic properties of its immobilized form incorporated into cross-linked alginate films. *Food Chemistry* 104:726-733.

Guedidi S., Yurekli Y., Dertani A., Dejardin P., Innocent C., Altinkaya, SA, Yemenicioğlu A. 2010. Effect of enzyme location on activity and stability of trypsin and urease immobilized on porous membranes by using layer-by-layer self-assembly of polyelectrolyte. *Journal of Membrane Science.* 365:59-67.

Şimşek Ş., Yemenicioğlu A. 2007. Partial Purification and Kinetic Characterization of Mushroom Stem Polyphenoloxidase and Determination of its Storage Stability in Different Lyophilized Forms. *Process Biochemistry*, 42:943-950.

Gemili S., Umdü E.S., Yaprak N., Üstok F.I., Yener F.Y.G., Güçbilmez Ç.M., Altinkaya S.A., Yemenicioğlu A. 2007. Partial purification of hen egg white lysozyme by ethanol precipitation method and determination of thermal stability of its lyophilized form. *Turkish Journal of Agriculture and Forestry.* 31: 125-134.

#### **FOOD BIOCHEMISTRY (FUNCTIONAL AND BIOACTIVE PROPERTIES OF HYDROCOLLOIDS)**

Arcan, I., Yemenicioğlu, A. 2007. Antioxidant activity of protein extracts from heat treated or thermally processed chickpeas and white beans. *Food Chemistry* 103:301-312.

Arcan I., Yemenicioğlu A. 2010. Effects of controlled pepsin hydrolysis on antioxidant potential and functional changes of chickpea proteins. *Food Research International.* 43:140-147.

Aydemir, L.Y., Yemenicioğlu A. 2013. Potential of Turkish Kabuli type chickpea and green and red lentil cultivars as source of soy and animal origin functional protein alternatives. *LWT-Food Science and Technology.* 50: 686-694.

Aydemir, L.Y., Gökbulut, A.A., Baran, Y., Yemenicioğlu, A. 2014. Bioactive, functional and edible film-forming properties of isolated hazelnut (*Corylus avellana* L.) meal proteins. *Food Hydrocolloids* 36:130-142.

Yemenicioğlu, A., Farris, S., Turkyilmaz, M., & Gulec, S. 2019. A Review of Current and Future Food Applications of Natural Hydrocolloids. *International Journal of Food Science & Technology.* 55(4):1389-1406.

Yemenicioğlu, A., Farris, S., Turkyilmaz, M., & Gulec, S. (2020). Editorial: Natural hydrocolloids in the food sector—Recent applications beyond conventional uses. *International Journal of Food Science & Technology*, 55(4), 1387-1388.

Boyacı, D., Kavur, P. B., Gulec, S., & Yemenicioğlu, A. (2021). Physicochemical and Active Properties of Gelatine-Based Composite Gels Loaded with Lysozyme and Green Tea Polyphenols. *Food Technology and Biotechnology*, 59(3), 337-348.

Çavdaroğlu, E., & Yemenicioğlu, A. (2022). Utilization of stalk waste separated during processing of sun-dried figs (*Ficus carica*) as a source of pectin: Extraction and determination of molecular and functional properties. *LWT*, 154, 112624.

## **BIOPRESERVATION OF FOOD**

Sozbilen, GS, Korel, F, Yemenicioğlu, A 2018. Control of lactic acid bacteria in fermented beverages using lysozyme and nisin: test of traditional beverage boza as a model food system. *International Journal of Food Science & Technology*. 53 (10): 2357-2368.

Kavur, P. B., & Yemenicioğlu, A. (2020). An innovative design and application of natural antimicrobial gelatin based filling to control risk of listeriosis from caramel apples. *Food Hydrocolloids*, 105938.

Boyacı, D., & Yemenicioğlu, A. (2020). Development of gel-based pads loaded with lysozyme and green tea extract: Characterization of pads and test of their antilisterial potential on cold-smoked salmon. *LWT*, 109471.

Sozbilen, G. S., & Yemenicioğlu, A. (2021). Antilisterial effects of lysozyme-nisin combination at temperature and pH ranges optimal for lysozyme activity: Test of key findings to inactivate *Listeria* in raw milk. *LWT*, 137, 110447.

Boyacı, D., Kavur, P. B., Gulec, S., & Yemenicioğlu, A. (2021). Physicochemical and Active Properties of Gelatine-Based Composite Gels Loaded with Lysozyme and Green Tea Polyphenols. *Food Technology and Biotechnology*, 59(3), 337-348.

Dervişoğlu, G., & Yemenicioğlu, A. (2022). The Use of Organic Sun-Dried Fruits for Delivery of Phenolic Compounds. *International Journal of Secondary Metabolite*, 9(2), 238-247.

## **EDIBLE PACKAGING**

Kandemir, N., Yemenicioğlu, A., Mecitoğlu, Ç., Elmacı, Z.S., Arslanoğlu, Göksungur, Y. Baysal, T. 2005. Production of antimicrobial films by incorporation of partially purified lysozyme into biodegradable films of crude exopolysaccharides obtained from *Aureobasidium pullulans* fermentation. *Food Technology and Biotechnology* 43:343-350.

Mecitoğlu, Ç., Yemenicioğlu, A., Elmacı, Z.S., Arslanoğlu, A., Çetin, A.E., Korel, F. 2006. Incorporation of partially purified hen egg white lysozyme into zein films for antimicrobial food packaging. *Food Research International* 39:12-21.

Güçbilmez, Ç.M., Yemenicioğlu, A., Arslanoğlu, A. 2007. Antimicrobial and antioxidant activity of edible zein films incorporated with lysozyme, albumin proteins and disodium EDTA. *Food Research International* 40:80-91.

Güçbilmez, Ç.M., Yemenicioğlu, A. 2007. Partial purification and preparation of bovine lactoperoxidase and characterization of kinetic properties of its immobilized form incorporated into cross-linked alginate films. *Food Chemistry* 104:726-733.

Gemili S., Yemenicioğlu A., Altinkaya S.A. 2009. Development of cellulose acetate based antimicrobial packaging materials for controlled release of lysozyme. *Journal of Food Engineering*. 90: 453-462.

Yener FYG, Korel F., Yemenicioğlu A. 2009. Antimicrobial activity of lactoperoxidase system incorporated into cross-linked alginate films. *Journal of Food Science*. 74: 453-462.

Gemili S, Yemenicioğlu A., Altinkaya SA. 2010. Development of antioxidant food packaging materials with controlled release properties. *Journal of Food Engineering*. 96:325-332.

Ünalın, I.U, Ucar, K.D.A, Arcan, I., Korel, F., Yemenicioğlu, A. Antimicrobial potential of polylysine in edible films. *Food Sci. Technol. Res.* 17(4): 375-380.

Ünalın, I.U., Korel, F., Yemenicioğlu, A. (2011). Active packaging of ground beef patties by edible zein films incorporated with partially purified lysozyme and Na<sub>2</sub>EDTA. *International Journal of Food Science and Technology*. 46: 1289-1295.

Arcan, I., Yemenicioğlu, A. (2011). Incorporating phenolic compounds opens a new perspective to use zein films as flexible bioactive packaging materials. *Food Research International*. 44(2): 550-556.

Alkan, D., Aydemir, L.Y., Arcan, I., Yavuzdurmaz, H., Atabay, H.I., Ceylan, C., Yemenicioğlu, A. (2011). Development of flexible antimicrobial packaging materials against *Campylobacter jejuni* by incorporation of gallic acid into zein-based films. *Journal of Agricultural and Food Chemistry*. 59(20):11003-11010.

Arcan, I., Yemenicioğlu, A. 2013. Development of flexible zein-wax composite and zein-fatty acid blend films for controlled release of lysozyme. *Food Research International*, 51: 208-216.

Ünalın, İ. U., Arcan, I., Korel, F., & Yemenicioğlu, A. (2013). Application of active zein-based films with controlled release properties to control *Listeria monocytogenes* growth and lipid oxidation in fresh Kashar cheese. *Innovative Food Science & Emerging Technologies*, 20, 208-214.

Arcan, I., Yemenicioğlu, A. 2014. Controlled release properties of zein-fatty acid blend films for multiple bioactive compounds. *Journal of Agricultural and Food Chemistry*. 62:8238-8246.

Alkan, B., Yemenicioğlu, A. 2016. Potential application of natural phenolic antimicrobials and edible film technology against bacterial plant pathogens. *Food Hydrocolloids* 55:1-10.

Boyacı, D., Korel, F., Yemenicioğlu, A. 2016. Development of activate-at-home-type edible antimicrobial films: An example pH-triggering mechanism formed for smoked salmon slices using lysozyme in whey protein films. *Food Hydrocolloids*. 60:170-178.

Boyacı, D., Yemenicioğlu, A. 2018. Expanding horizons of active packaging: Design of consumer-controlled release systems helps risk management of susceptible individuals. *Food Hydrocolloids*. 79:291-300.

Boyacı, D., Iorio, G., Sozbilen, G. S., Alkan, D., Trabattani, S., Pucillo, F., & Yemenicioğlu, A. 2019. Development of flexible antimicrobial zein coatings with essential oils for the inhibition of critical pathogens on the surface of whole fruits: Test of coatings on inoculated melons. *Food Packaging and Shelf Life*, 20:100316.

Sozbilen, G. S., & Yemeniciođlu, A. 2020. Decontamination of seeds destined for edible sprout production from *Listeria* by using chitosan coating with synergetic lysozyme-nisin mixture. *Carbohydrate Polymers*, 115968.

Çavdarođlu, E., Farris, S., & Yemeniciođlu, A. (2019). Development of pectin–eugenol emulsion coatings for inhibition of *Listeria* on webbed-rind melons: a comparative study with fig and citrus pectins. *International Journal of Food Science & Technology*. 55(4), 1448-1457.

Sözbilen, G. S., Çavdarođlu, E., & Yemeniciođlu, A. (2022). Incorporation of organic acids turns classically brittle zein films into flexible antimicrobial packaging materials. *Packaging Technology and Science*, 35(1), 81-95.

Çavdarođlu, E., Büyüктаş, D., Farris, S., & Yemeniciođlu, A. (2023). Novel edible films of pectins extracted from low-grade fruits and stalk wastes of sun-dried figs: Effects of pectin composition and molecular properties on film characteristics. *Food Hydrocolloids*, 135, 108136.

## **FOOD CHEMISTRY/FOOD SCIENCE**

Özkan, M., Yemeniciođlu, A., Çıtak, B., Cemeröđlu, B. 2000. Effect of hydrogen peroxide on sour cherry anthocyanins. *J. Food Quality*. 23(4):421-428.

Yemeniciođlu, A., Günaydın, N., Cemeröđlu, B. 2000. Cloud stabilisation of naturally cloudy apple juices by heat treatments. *Fruit Processing* 7:278-282.

Özkan, M., Yemeniciođlu, A., Asafi, N., Cemeröđlu, B. 2002. Degradation kinetics of anthocyanins from sour cherry, pomegranate and strawberry juices by hydrogen peroxide. *J. Food Sci.* 67:525-529.

Demirbüker, D., Arcan, I. Tokatlı, F., Yemeniciođlu A. 2005. The effects of hot rehydration in the presence of hydrogen peroxide on microbial quality, texture, color and antioxidant activity of cold stored intermediate moisture sun-dried figs. *J Food Sci.* 70:153-159.

Özkan, M., Yemeniciođlu, A., Cemeröđlu, B. 2005. Degradation of various fruit juice anthocyanins by hydrogen peroxide. *Food Research International* 38:1015-1021.

Okmen B., Sigva H.O., Mutlu S., Doganlar S., Yemeniciođlu A., Frary A. 2009. Total antioxidant activity and total phenolic contents in different Turkish eggplant (*Solanum melongena* L.) cultivars. *International Journal of Food Properties*. 12:616-624.

Frary A., Keçeli M.A., Ökmen B., Şıđva H.Ö., Yemeniciođlu A., Dođanlar S. 2009. Water-soluble antioxidant potential of Turkish pepper cultivars. *Hortscience*. 43:631-636.

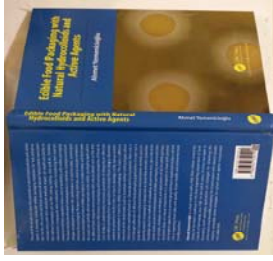
Frary A., Göl D., Keleş D., Ökmen B., Pinar H., Şıđva H.Ö., Yemeniciođlu A., Dođanlar, S. 2010. Salt tolerance in *Solanum pennellii*: antioxidant response and related QTL. *BMC Plant Biology*. 10(58):1-16.

Dervişođlu, G., & Yemeniciođlu, A. (2022). The Use of Organic Sun-Dried Fruits for Delivery of Phenolic Compounds. *International Journal of Secondary Metabolite*, 9(2), 238-247.



## MONOGRAPHIC BOOKS

Yemenicioğlu, A. (2022). Edible Food Packaging with Natural Hydrocolloids and Active Agents (1st ed.). 346 Page. CRC Press. <https://doi.org/10.1201/9780429329890>.



## BOOK CHAPTERS

Cemeroğlu, B., Yemenicioğlu, A. ve Özkan. M. (2001). Meyve ve Sebze İşleme Teknolojisi, Cilt 1: Meyve ve Sebzelerin Bileşimi-Soğukta Depolanmaları.(Fruit and Vegetable Processing Technology, Vol 1: The composition and cold storage of fruits and vegetables) Gıda Teknolojisi Derneği, Yayın Numarası: 24, Başkent Matbaacılık, 328P.

Cemeroğlu, B., Yemenicioğlu, A. ve Özkan. M. (2004). Meyve ve Sebzelerin Bileşimi, Cilt 1, Editör: Cemeroğlu, B. Meyve ve Sebze İşleme Teknolojisi 2. Baskı, (Composition of fruits and vegetables, Vol 1: Fruit and Vegetable Processing Technology), Başkent Klîşe Matbaacılık, Ankara, 670P.

Yemenicioğlu, A. ve Özkan. M. (2004). Meyve ve Sebzelerle Bunlardan Elde Edilen Ürünlerin Dayandırma Yöntemleri, Cilt 1, Editör: Cemeroğlu, B. Meyve ve Sebze İşleme Teknolojisi 2. Baskı, (Preservation techniques for fruits and vegetables, Vol 1: Fruit and Vegetable Processing Technology), Başkent Klîşe Matbaacılık, Ankara, 670P.

Yemenicioğlu A. (2016). Chapter 41, Zein and its composites and blends with natural active compounds: Development of antimicrobial films for food packaging. In: Barros-Velazquez, B. (Editor) Antimicrobial Food Packaging. Elsevier, Academic Press. Oxford. 654P.

Yemenicioğlu, A., (2016). Chapter 17. Strategies for controlling major enzymatic reactions in fresh and processed vegetables. In: Hui Y.H. and Evranuz Ö. (Editors) Handbook of vegetable preservation and processing. Second Edition. CRC Press. New York. 969P.

Arcan, I., Boyacı, D., Yemenicioğlu, A. (2016). The use of zein and its edible films for the development of food packaging materials. Encyclopedia In: Reference module in food sciences, Elsevier, First Edition, 1-11.

Yemenicioğlu, A. (2017). Basic strategies and testing methods to develop effective edible antimicrobial and antioxidant coating. In: Atul Tiwari (Editor) Handbook of antimicrobial coatings. First Edition. Elsevier, 596P.

