Laboratory Chemistry of Lipids

Group of Lipid Oxidation Stability and Structure - Antioxidant Activity Relationship

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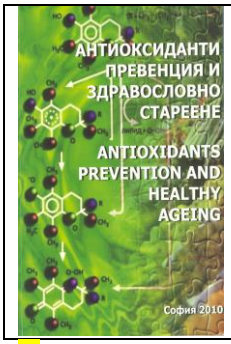

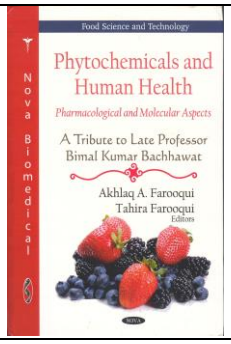

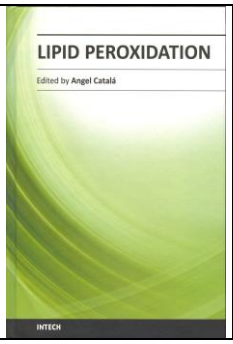

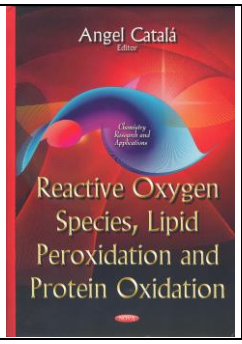

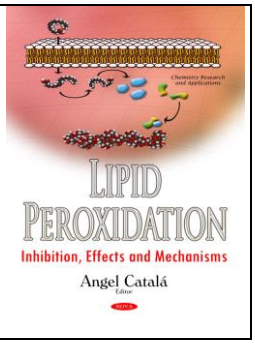

Lipid peroxidation monography, open access
http://www.intechopen.com/articles/show/title/lipid-oxidation-in-homogeneous-and-micro-heterogeneous-media-in-presence-of-prooxidants-antioxidants
Reactive Oxygen Species, Lipid Peroxidation and Protein Oxidation, open access; Lipid Peroxidation – open access

- 1952, 28 February – Born in Karnobat, Bulgaria
- 1971 – Chemist-technologist, Technical School of Chemistry "Prof.As.Zlatarov", Sofia.
- 1976 - M.Sc.Eng.Chem., Chemistry of Organic Synthesis, University of Chemical Technological and Metallurgy, http://www.uctm.edu/ Sofia, Bulgaria
- 1982-1986, Research Chemist, Laboratory Chemistry of Lipids, Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences
- 1986-1998, Research Fellow, Laboratory Chemistry of Lipids, IOCCP-BAS.
- 1997- Doctoral Degree (PhD) IOCCP-BAS; Ph.D Thesis: "Kinetics and Mechanism of Lipid Oxidation in Presence of Fatty Alcohols and Mono- and Diacylglycerols".
- 1998-2005 - Senior Research Associate, IOCCP-BAS,
- 2005 - Associate Professor, IOCCP-BAS,
- 2007 - Leader of the Group of Lipid Oxidation Stability and Structure-Antioxidant Activity Relationship, IOCCP-BAS,
- 2018 – Professor, IOCCP – BAS.

Research Interests:

- Determination of oxidative stability of lipids, fats, oils and all lipid containing products.
- Study the kinetics and mechanism of lipid oxidation in absence and in presence of pro-oxidants, anti-oxidants and surfactants.
- Combination of kinetical, spectral and theoretical methods (quantum-chemical calculations and QSAR) to study the structure-activity relationships of various antioxidants.
- Application of kinetic and structural modeling and computer simulation to study the lipid oxidation processes and the reactivity of phenoxyl radicals formed in homogeneous and micellar media.
- Natural bio-antioxidants as a base of new synthetic drugs and food supplements

Joint international projects with:

- ✓ ***Russia:*** Semenov Instituite of Chemical Physics, Russian Academy of Sciences, http://www.chph.ras.ru/ , Moscow, 1988-1990, 1996–2008, 2009–2014 and continueN.N.Emanuel Institute of Biochemical Physics, Russian Academy of Sciences, http://ibcp.chph.ras.ru/ 2009-2014 and continue.
- ✓ ***Germany:*** GSF-National Research Center for Environment and Health, Institute of Radiation Biology, http://www.hi-europe.info/files/1998_9/gsf.htm Neuherberg, 2000-2001;
- ✓ ***Greece:*** Aristotle University of Thessaloniki, School of Chemistry, Laboratory of Food Chemistry and Technology, http://www.auth.gr/home/index_en.html Thessaloniki, 2003 - 2004;
- ✓ ***Spain:*** University of Santiago de Compostela, Molecular Informatics, X-Ray Unit, RIAIDT-Structural Studies Area, http://www.usc.es/en/index.jsp Edificio CACTUS, Santiago de Compostela, 2004-2007.
- ✓ ***India:*** Central Food Technological Research Institute (CFTRI), Traditional Food Department, Mysore, http://www.cftri.com/aboutus/index.html, 2006 – 2009;
  University of Delhi, 2010- and continue
- ✓ ***Italy:*** CNR Institute of Bio-molecular Chemistry, Sassari and Catania, http://www.icmib.na.cnr.it/home/; and Sapienza University of Rome, http://www.uniroma1.it/; 2010- and continue
- ✓ ***Poland:*** Institute of Animal Reproduction and Food Research, Polish Academy of Sciences, Olsztyn, http://www.pan.olsztyn.pl/en/ 2012-and continue.

Membership in Scientific Organizations

- Member of the Union of the Chemists in Bulgaria since 1982;
- Member of the Union of the Scientists in Bulgaria since 1999;
- Member of German Society for Fat Research (Deutsche Gesellschaft fuer Fettwissenschaft e.V., DGF) since 2002; http://www.dgfett.de/
- Member o the European Federation for Lipid Science and Technology (EuroFedLipid) since 2002- http://www.eurofedlipid.org/index.htm
- Expert of European Food Safety Authority (EFSA) http://www.efsa.europa.eu/ since 2010-
- Lector in Centre of BAS for PhD student – since 2011.
- Lector in Medicinal University-Sofia, Post-graduated course of Department of Human Health-2009-2011

Selected publications: *(former family name Kortenska)*

A) As chapters of books:

1.V.D.Kancheva, S.E.Angelova, *Synergistic effects of antioxidant compositions during inhibited lipid autoxidation*; In: Lipid Peroxidation: Inhibition, Effects and Mechanisms; ed. A.Catala, Nova Science Publisher, New York, USA, 2017, Chapter 4, 49-81.
2.V.D.Kancheva, S.E.Angelova, A.K.Slavova-Kazakova; *Kinetics and mechanism of inhibited lipid autoxidation in presence of 4-substituted-coumarins*; In: Lipid Peroxidation: Inhibition, Effects and Mechanisms; ed. A.Catala, Nova Science Publisher, New York, USA, 2017, Chapter 10, 213-247.
3.G.F.Fedorova, **V.D.Kancheva**, V.A.Menshov, V.V.Naumov, R.F.Vasil'ev, T.L.Veprintsev, A.V. Trofimov, Y.B.Tsaplev, O.I.Yablonskaya; *Exogenous and Endogenous Mediators of Oxygen Metabolism: Alternatives for Chemical and Biological Activity,* Studies in Natural Products Chemistry , Chapter 11,

2016, 357-385, SBN: 978-0-444-63603, doi:10.1016/B978-0-444-63603-4.00011-5
4. V.D.Kancheva, *Oxidative Stress and Lipid Oxidation: Non-Inhibited and Inhibited*; in: Reactive Oxygen Species, Lipid Peroxidation and Protein Oxidation, Nova Sci. publ., New York, ed. A.Catala, 2014, Chapter 1, 1 – 42 (ISBN 978-1-63321-886-4, hard copy).
5.V.D.Kancheva, *Phenolic Antioxidants of Natural Origin – Structure Activity Relationship and their Beneficial Effect on Human Health. In: "Phytochemicals and Human Health: Pharmacological and Molecular Aspects",* Nova Science Publishers Inc., USA, Ed. A.A.Farooqui, 2012, Chapter I, 1 - 45 (ISBN: 978-1-61761-196-4).
6.V.D.Kancheva, O.T.Kasaikina, *Lipid Oxidation in Homogeneous and Micro-heterogeneous Media in Presence of Prooxidants, Antioxidants and Surfactants.* In: Lipid Peroxidation, ed. A. Catala, In Tech Open Access Publ. 2012 (ISBN: 980-953-307-143-0).
7.V.Kancheva, *Oxidative Stress and Lipid Oxidation.* In: "Antioxidants - Prevention and Healthy Aging", Ed. by F.Ribarova, SIMELPRESS Publ., Sofia, Bulgaria, 2010, Chapter 3, 233-238 (ISBN-978-954-9487-89-3).
8.**V.Kancheva**, *Antioxidants. Structure - Activity Relationship.* In: "Antioxidants - Prevention and Healthy Aging", Ed. by F. Ribarova, SIMELPRESS Publ., Sofia, Bulgaria, 2010, Chapter 1, 56-72(ISBN-978-954-9487-89-3).
9.**V.D.Kortenska-Kancheva,** V.S.Bankova; *A Review of the Antioxidant Activity of Propolis from Different Areas*; Recent Progress in Medicinal Plants, J.N.Govil, V.K.Singh, K.Ahmad, eds. Studium Press, LLC, Texas, USA, Volume **14,** 2006, Chapter 6, 81-98.
10.V.G.Kondratovich, **V.D.Kortenska**, Z.S.Kartasheva, N.V.Yanishlieva, I.R.Totzeva, M.I.Boneva, O.T.Kasaikina; *Kinetics of Lipid Oxidation and Lipid Hydroperoxide Decomposition in the Presence of Amphyphilic Compounds*, in: Peroxides at the Beginning of the Third Millenium: Synthesis, Properties, Application, Eds. V.A.Antonovsky, O.T.Kasaikina, G.E.Zaikov, Nova Science Publ., New York, 2004, Chapter **14**, 261-267.

B) As publications

11. **V.D.Kancheva,** A. Slavova-Kazakova, S.. E. Angelova, S.K. Singh, Sh.Malhotra, B.K.Singh, L.Saso, A.K. Prasad, V.S.Parmar. *Protective effects of 4-methylcoumarins and related compounds as individual components and in antioxidant compositions*. Biochimie, 140, **2017**, 133-145
12. M.C.Foti, A.Slavova-Kazakova, C.Rocco, **V.D.Kancheva**, *Kinetics of curcumin oxidation by 2,2'-diphenyl-1-picrylhydrazyl (DPPH•):an interesting case of separated couplet proton – electron transfer*, Organic & Biomolecular Chemistry, 14, 2016, 8331-8337, doi:10.1039/c6ob01439e
13. A.K.Slavova-Kazakova, S.E.Angelova, T.L.Veprintsev, P.Denev, D.Fabbri, M.A.Dettori, M.Kratchanova, V.V.Naumov, A.V.Trofimov, R.F.Vasilév, G.Delogu, **V.D.Kancheva**; *Antioxidant potential of curcumin-related compounds syudied by chemiluminescence kinetics, chain-breaking efficiencies, scavenging activity (ORAC) and DFT calculations*, Beilstein J Org. Chem., **11**, 2015, 1398-1411 (ISSN: 1860-5397),
14. **V.D.Kancheva,** A.Slavova-Kazakova, D.Fabbri. M.A. Dettori. G. Delogu, M.Janek, R. Amarowicz, *Protective Effects of Equimolar Mixtures of Dehydrozingerone and its Dimer with α-Tocopherol and/or Ascorbylpalmitate during Lipid Autoxidation*, Food Chem., **157**, 2014, 263-274.
15.**V.D.Kancheva***,* L.Saso, S.Angelova, M.C.Foti, A.Slavova-Kasakova, C.Draquino, V.Enchev, O.Firuzi, J.Nechev*; Antiradical and Antioxidant Activities of Some New Bio-antioxidants*; BIOCHIMIE, **94**, 2011, 403-415.
16. **V.D.Kancheva**, P.V.Boranova, J.T.Nechev, I.I.Manolov; *Structure-Activity Relationships of New 4-Hydroxy – Bis-Coumarins as Radical Scavengers and Chain-Breaking Antioxidants;* BIOCHIMIE, **92** (9), 2010, 1138-1146.
17.**V.D.Kancheva,** L.Saso, P.V.Boranova, M.K.Pandey, Sh.Malhorta, J.T.Nechev, A.K.Prasad, M.B.Georgieva, A.L.DePass, V.S.Parmar, *Structure-Activity Relationship of Some Dihydroxy Coumarins. Correlation ьetween Experimental and Theoretical Data and Synergistic Effect*. BIOCHIMIE, **92** (9) 2010, 1089-1100.
18. **V.D.Kancheva,** *Protective Effects of Natural bio-antioxidants and their Synthetic Analogues in Equimolar Binary and Mixtures; Trakia Journal of Sciences, 13, 2015, 1-18 (ISSN 1313-7050).*
19.R.F.Vasilev, **V.D.Kancheva,** G.F.Fedorova, D.I.Batovska, A.V.Trofimov; *Antioxidant Activity of Chalcones. The Chemiluminescence Determination of the Reactivity and Quantum – Chemical Calculation of the Energies and Structures of Reagents and Intermediates.* Kinetics and Catalysis, **51** (4), 2010, 507-515.

20.O.T.Kasaikina, Z.S.Kartasheva, **V.D.Kancheva**, N.V.Yanishlieva, I.R.Totseva; *Consumption of Quercetin and Rutin in Reactions with Free Radicals*. Bulg. Chem. Commun., **42** (2), 2010, 153-161.
21.**V.D.Kancheva,** *Phenolic Antioxidants – Radical Scavenging and Chain Breaking Activities. Comparable study.* Eur J Lipid Sci Technol., **111** (11) 2009, 1072-1089 (отличена като най-добро научно постижение на „Колоквиума по природни вещества"- ИОХЦФ-БАН).
22.A.G.Gopala Krishna, B.R.Lokesh, D.Sugasini, **V.D.Kancheva**; *Evaluation of the Antiradical and Antioxidant Properties of Extracts from Indian Red Chili and black Pepper by in vitro Models.* Bulg. Chem. Commun., **42** (1), 2010, 62-69.
23.I.Tsibranska, I.Seikova, R.Kochanov, **V.Kancheva**, G.Peev; *Perspectives for Integration of Nanofiltration with Solid-Liquid Extraction from Plant Materials. In:"*Nanoscience & Nanotechnology, Section E: Bio-inspired Concepts and Medical Applications", Eds. E.Balabanova, I.Dragieva, Sofia, 2009, Issue 9, 210-212.
24.**V.D.Kancheva,** O.T.Kasaikina, P.S.Denkova, Z.S.Kartasheva, I.R.Totseva, N.V.Yanishlieva; *Study on the Kinetics of Formation and Structure of Mixed Micelles Formed by Surfactants, Antioxidants and Lipid Hydroperoxides, In:"*Nanoscience & Nanotechnology, Section E: Bio-inspired Concepts and Medical Applications", Eds. E.Balabanova, I.Dragieva, Sofia, 2009, Issue 9, 225-227.
25.**V.D.Kancheva**, V.S.Bankova; *Chain - Breaking Antioxidant Activity of Two New Chalcones from Propolis of El Salvador in Homogeneous and Micellar Media*, Bulg. Chem. Commun., **40**, 2008, 546-555.
26.M.Spasova, **V.D.Kortenska-Kancheva**, I.Totseva, G. Ivanova, L. Georgiev, Ts. Milkova; *Synthesis of Cinnamoyl- and Hydroxy-cinnamoyl- Amino Acid Conjugates and Evaluation of Their Antioxidant Activity*, Journal of Peptide Science, **12**, 2006, 369-375.
27.**V.Kancheva**, M.Spasova, I.Totseva, Ts.Milkova, Study on the Antioxidant Activity of N-hydroxycinnamoyl-Amino Acid Conjugates in Bulk Lipid Autoxidation, Riv. Ital. delle Sost. Grasse, **83**, 2006, 162-169.
28.O.T.Kasaikina, **V.D.Kancheva**, T.V.Maximova, Z.S.Kartasheva, V.V.Vedutenko, N.V.Yanishlieva, V.G.Kondratovich, I.R.Totseva; *Catalytic Effect of Amphiphilic Compounds on the Lipid Oxidation and Lipid Hydroperoxide Decomposition,* Oxidation Communications, **29**, *2006, 574-584.*
29.**V.D.Kancheva**, R.Taskova, I.Totseva, N.Handjieva; *Antioxidant Activity of Extracts, Fractions and Flavonoid Constituents from Carthamus lanatus L.,* Riv. Ital. delle Sost. Grasse, **84**, 2007, 77-86.
30.**V.D.Kancheva,** D.Dinchev, M.Tsimidou, I.Kostova, N.Nenadis; *Antioxidant Properties of Tribulus Terrestris from Bulgaria and Radical Scavenging Activity of its Flavonoid Components,* Riv. Ital. delle Sost. Grasse, **54**, 2007, 10-19.
31.**V.D.Kortenska-Kancheva,** N.V.Yanishlieva, K.S.Kyoseva, M.I.Boneva, I.R.Totzeva; *Antioxidant Activity of Cinnamic Acid Derivatives in Presence of a Fatty Alcohol During the Lard Autoxidation,* Riv. Ital. delle Sost. Grasse, **82**, 2005, 87-92.
32.**V.D.Kortenska-Kancheva,** V.S.Bankova, M.P.Popova; *Antioxidant Capacity of New Chalcones from Propolis of El Salvador – during Methyl Linoleate Oxidation in Micellar Solutions*, Oxidation Communications, **28** (3), 2005, 525-535.
33.**V.D.Kortenska-Kancheva**, V.A.Belyakov; Simulation of Lipid Oxidation Kinetics in Various Mechanisms of Hydroperoxides Decomposition, Riv. Ital. delle Sost. Grasse, **82**, 2005, 177-185.
34.W.Bors, **V.D.Kortenska**, L.Y.Foo, K.Stettmaier; *Density-Functional Calculations of Gallotannin and Ellagitannin Aroxyl Radicals,* Oxidation Communications, **28**, 2005, 273-285 .
35.I.I.Koleva, J.P.H.Linssen, T.A.van Beek, L.N.Evstatieva, **V.Kortenska**, N.Hanjieva; *Antioxidant Activity Screening of Extracts from Sideritis Species (Labiatae) Grown in Bulgaria*; J. Sci. Food Agric., **83**, No8, 2003, 809-819.
36.I.F.Rusina, M.I.Boneva, O.T.Kasaikina, **V.D.Kortenska,** N.V.Yanishlieva; *Evaluation of the Antiradical Efficiency of Cinnamic Acid Derivatives Using a Chemiluminescence Method*, Oxidation Communications, **27,** 2004, 562-570.