

Igor A. Butovich, Ph.D.

Associate Professor,
Department of Ophthalmology and the Graduate School of Biomedical
Sciences, University of Texas Southwestern Medical Center,
Dallas, TX 75390-9057
E-mail: igor.butovich@utsouthwestern.edu

RESEARCH APPOINTMENTS:

2011-present

Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas TX Position:
Associate Professor

2004 – 2011

Department of Ophthalmology, University of Texas Southwestern Medical Center, Dallas TX Position:
Assistant Professor

2012 – 2017

Metabolomics Core Laboratory, National Eye Institute Vision Research Core Facility, University of
Texas Southwestern Medical Center, Dallas TX
Position: Director

2003 – 2004

Department of Medical Biochemistry and Biophysics (MBB), Division of Physiological Chemistry
II, Karolinska Institute, Stockholm, Sweden
Position: Visiting Professor

2001 – 2003

Department of Pharmaceutical Sciences, Medical University of South Carolina, Charleston, SC
Position: Assistant Professor

1990 – 2001

Laboratory of Chemical Enzymology, Institute of Bio-Organic Chemistry, National Academy of
Sciences, Kiev, Ukraine
Position: Head of Laboratory

1985 – 1990

Department of Fine Organic Synthesis, Institute of Bio-Organic Chemistry, National Academy of
Sciences, Kiev, Ukraine
Positions: Scientist, Senior Scientist

EDUCATION:

Ph.D., Institute of Physical Chemistry, National Academy of Sciences, Kiev, Ukraine
(physical chemistry/enzymology)
BS, M.Sc. National University, Kiev, Ukraine (Summa Cum Laude; biochemistry/biology)

CURRENT RESEARCH SUPPORT:

NIH NEI R01 grant “Meibogenesis in Health, Disease, and Aging (previously, Lipogenesis in the meibomian glands and adnexa in the norm and pathology” – 2017-2026 (Role: PI)

NIH NEI R01 grant “Modifying the extracellular matrix to prevent dry eye disease and age-related Meibomian gland dysfunction” – 2022-2026 (Role: subcontract)

PENDING RESEARCH SUPPORT:

Administrative Supplement for NIH NEI R01 grant “Meibogenesis in Health, Disease, and Aging (previously, Lipogenesis in the meibomian glands and adnexa in the norm and pathology” (Role: PI)

NIH NEI R01 grant “Elucidating the Role of the Hedgehog Signaling Pathway in Meibomian Gland Morphogenesis, Renewal and Therapeutics” (Role: Co-PI)

PREVIOUS RESEARCH SUPPORT:

NIH NEI R01 grant “Biosynthesis and physiological roles of extremely long chain lipids in the eye” – 2016-2021 (Role: PI)

NIH NEI R01 grant “Biochemistry and biophysics of the precocular tear film” – 2010-2016 (Role: PI)

NIH Core grant P30EY020799 “Core grant for vision research” – 2010-2017 (Role: Module Director)

PROFESSIONAL STANDING:

UTSW Graduate School admission interviewer (2023)

Reviewer for the NEI ZRG1 IMST-U Training in Veterinary and Comparative Medicine panel (USA, 2022)

Reviewer for the NEI Special Emphasis Panel ZEY1-VSN(11) (USA, 2022)

Guest Editor of Special Issue "Emerging Omics Approaches to Studying the Eye in the Norm and Pathology 2.0", International Journal of Molecular Sciences (2022)

Editorial board member of the International Journal of Molecular Sciences (2021-present)

Editorial Board member - Journal of Steroids & Hormonal Science (since 2013)

Guest Editor of Special Issue "Emerging Omics Approaches to Studying the Eye in the Norm and Pathology", International Journal of Molecular Sciences (2019)

Visiting Fellowship from the Faculty of Science of the University of New South Wales (Sydney, Australia, 2018)

Mail-in grant reviewer for the NIH CMT Study Section, Bethesda, MD, USA (2018)

Thesis examiner for Nanyang Technological University (Singapore, 2018)

Institutional Committee Assignments (UTSW): Co-mentoring a Junior Fellow (Jingfei Chen from Dr. Mendelson's laboratory); recruiting graduate students for the Biological Chemistry program of the Graduate School of Biomedical Sciences (2018, 2023)

Organizer and Invited Speaker of a Special Interest Group Meeting "Lipid and Lipid Targeted Therapies for Eye Diseases- Past, Present and Future", ARVO Conference (Honolulu, HI, 2018)

2018 Albert Nelson Marquis Lifetime Achievement Awardee

Ad-hoc reviewer for the Ocular Surface, Cornea, Anterior Segment Glaucoma, and Refractive Error Special Emphasis Panel, [ZRG1 BDCN-J (81)] (USA, 2017)

Guest Editor of Special Issue "Dry Eye and Ocular Surface Disorders", International Journal of Molecular Sciences (2017)

Grant reviewer for The Netherlands Organization for Scientific Research (Netherlands, 2016)

XXIInd ISER Biennial Meeting (Tokyo, Japan, 2016) Session "Meibomian Glands and Meibum - From Biochemistry to Physiology to Disease" Organizer

Assessor for the National Competitive Grants Program of the Australian Research Council (Australia, 2014)

Fellow of Royal Society of Medicine (London, United Kingdom, 2010)

Visiting Professor (STINT Fellow), Karolinska Institute (Stockholm, Sweden, 2003–2004)

Senior Research Fellow in Bioorganic Chemistry (National Academy of Sciences and Cabinet of Ministers of Ukraine, 1997)

Bijvoet Center for Biomolecular Research Guest Scientist, Utrecht University (Utrecht, the Netherlands, 1992)

The British Council/The Leverhulme Trust Post-Doctoral Fellow (Great Britain, 1991–1992)

Multiple National awards and fellowships, USSR and Ukraine (1980–1997; a complete list is available upon request).

PEER REVIEWING:

Acta Ophthalmologica; Analytical Methods; Archives of Ophthalmology; Biochimica et Biophysica Acta; Chemistry and Physics of Lipids; Cornea; Experimental Eye Research; Investigative Ophthalmology and Visual Science; Journal of Chromatography; Journal of Lipid Research; Langmuir; Lipids; Medical Science Monitor; Molecular Vision; Ocular Surface; Optometry and Vision Science; Plant Physiology and Biochemistry; Progress in Retinal and Eye Research; Prostaglandins and Other Lipid Mediators; Talanta; among others.

MENTORING:

Seher Yuksel, Ph.D. – postdoctoral trainee (2018-2021, 2022-present)

Hoang Quoc Hai Pham – Summer student (2019; currently a Ph.D. student at City of Hope National Medical Center)

Jadwiga C. Wojtowicz, M.D. – Research Assistant Professor (2012-2017)

Former M.D. trainees (residents and fellows): Juan-Carlos Arciniega, Eduardo Uchiyama, Erfan Nadji, Shawn Agee, Laura Mendiola

PROFESSIONAL AFFILIATIONS:

American Society for Biochemistry and Molecular Biology (ASBMB, USA)

International Society for Eye Research (ISER, USA)

Association for Research in Vision and Ophthalmology (ARVO, USA)

Royal Society of Medicine (RSM, United Kingdom)

Association of Colleges of Pharmacy (ACCP, USA)

American Chemical Society (ACS, USA)

International Society for the Study of Fatty Acids and Lipids (ISSFAL, USA)

Ukrainian Biochemical Society (Ukraine)

RECENT INVITED LECTURES AND PRESENTATIONS:

ARVO 2023 Annual meeting, seven poster presentations

ARVO 2022 Annual meeting, paper presentation

ARVO 2021 Annual meeting, paper presentation

ARVO 2020 Annual meeting, two paper presentations (Baltimore, MD)

Kyoto Prefectural University of Medicine, invited lecture (Kyoto, Japan, 2018)

University of New South Wales, invited lecture (Sydney, Australia, 2018)

ARVO 2018 Annual meeting, paper presentation (Honolulu, HI)

ARVO 2017 Annual meeting (Baltimore, MD)

XXIInd ISER Biennial Meeting, paper presentation (Tokyo, Japan, 2016)

Pathobiology of Meibomian Gland 2016 (Wakayama, Japan, 2016)

XXIst ISER Biennial Meeting (San Francisco, CA, 2014)

4th International Singapore Lipid Symposium (Singapore, 2012)

Singapore Eye Research Institute (Singapore, 2012)

ARVO Annual Meetings (2009, 2010)

LIST OF CITATIONS:

<https://scholar.google.com/citations?user=cuw210kAAAAJ&hl=en&oi=ao>

PUBLISHED PEER-REVIEWED PUBLICATIONS:

118. *Butovich I.A.*, Wilkerson A., Yuksel S.

Dysregulation of Lipid Metabolism in Aging Meibomian Glands and Its Molecular Markers.

Int J Mol Sci. 2023, Aug 31;24(17), 13512; <https://doi.org/10.3390/ijms241713512>.

117. Xu X., Wilkerson A., Li G., **Butovich I.A.**, Zuo Y.Y.
Comparative Biophysical Study of Meibomian Lipids of Wild Type and Soat1-Null Mice: Implications to Meibomian Gland Dysfunction and Dry Eye Disease.
Invest Ophthalmol Vis Sci. 2023 Aug 1;64(11):20. doi: 10.1167/iovs.64.11.20.
116. **Butovich I.A.**, Wilkerson A., Goggans K., Belyaeva O., Kedishvili N., Yuksel S.
Sdr16c5 and Sdr16c6 control a dormant pathway at a bifurcation point between meibogenesis and sebogenesis.
J Biol Chem. 2023 Jun;299(6):104725. doi: 10.1016/j.jbc.2023.104725.
115. Yuksel S., Aredo B., Zegeye Y., Zhao C.X., Hulleman J., Gautron L., Ludwig S., Moresco E., **Butovich I.A.**, Beutler B.A., Ufret-Vincenty R.
Forward genetic screening using fundus spot scale identified essential role for *Lipe* in retinal homeostasis.
Commun Biol. 2023 May 17;6(1):533. doi: 10.1038/s42003-023-04870-7.
114. Portal C., Lin Y., Rastogi V., Peterson C., Yiu S., Foster J., Wilkerson A., **Butovich I.A.**, Iomini C.
Primary cilia control cellular patterning and dimension of Meibomian glands during morphogenesis but not lipid composition of the meibum.
Commun Biol. 2023 Mar 17;6(1):282. doi: 10.1038/s42003-023-04632-5.
113. **Butovich I.A.**, Yuksel S., Wilkerson A.
Probing dietary triacylglycerol metabolism and meibogenesis in mice: A stable isotope labeled tracer LC—MS/MS study.
J Biol Chem. 2023 Apr;299(4):103046. doi: 10.1016/j.jbc.2023.103046.
112. **Butovich I.A.**, Wilkerson A.
Dynamic Changes in the Gene Expression Patterns and Lipid Profiles in the Developing and Maturing Meibomian Glands.
Int J Mol Sci. 2022 Jul 17;23(14):7884. doi: 10.3390/ijms23147884.
111. **Butovich I.A.**, Yuksel S., Leonard B., Gadek T., Polans A.S., Albert D.M.
Novel Lipids of the Rabbit Harderian Gland Improve Tear Stability in an Animal Model of Dry Eye Disease.
J Ocul Pharmacol Ther. 2021 Dec;37(10):545-555. doi: 10.1089/jop.2021.0015.
110. **Butovich I.A.**, Suzuki T.
Effects of Aging on Human Meibum.
Invest Ophthalmol Vis Sci. 2021 Sep 2;62(12):23. doi: 10.1167/iovs.62.12.23.
109. **Butovich I.A.**, Wilkerson A., Yuksel S.
Differential effects of dietary cholesterol and triglycerides on the lipid homeostasis in Meibomian glands.
J Steroid Biochem Mol Biol . 2021 Apr 2;105894. doi: 10.1016/j.jsbmb.2021.105894.
108. **Butovich I.A.**, Wilkerson A., Yuksel S.
Depletion of cholesteryl esters causes Meibomian gland dysfunction-like symptoms in a Soat1-null mouse model.
Int J Mol Sci. (2021); 22, 1583. <https://doi.org/10.3390/ijms22041583>.
107. Wilkerson A., Bhat N., Quoc Hai Pham H., Yuksel S., **Butovich I.**
Physiological effects of inactivation and the roles of Elovl3/ELOVL3 in maintaining ocular homeostasis.
FASEB J. (2021); Feb;35(2):e21327. doi: 10.1096/fj.202002323R.

106. **Butovich I.A.**, Suzuki T., Wojtowicz J., Bhat N., Yuksel S.
Comprehensive profiling of Asian and Caucasian meibomian gland secretions reveals similar lipidomic signatures regardless of ethnicity.
Sci Rep. (2020); Sep 3;10(1):14510. doi: 10.1038/s41598-020-71259-5.
105. **Butovich I.A.**, Suzuki T.
Delineating a novel metabolic high triglycerides-low waxes syndrome that affects lipid homeostasis in meibomian and sebaceous glands.
Exp Eye Res. (2020); Oct;199:108189. doi: 10.1016/j.exer.2020.108189.
104. **Butovich I.A.**, Bhat N., Wojtowicz J.C.
Comparative Transcriptomic and Lipidomic Analyses of Human Male and Female Meibomian Glands Reveal Common Signature Genes of Meibogenesis.
Int J Mol Sci. (2019); Sep 13;20(18):4539. doi: 10.3390/ijms20184539.
103. **Butovich I.A.**, Wilkerson A., Bhat N., McMahon A., Yuksel S.
On the pivotal role of Elovl3/ELOVL3 in meibogenesis and ocular physiology of mice.
FASEB J. (2019); Sep;33(9):10034-10048. doi: 10.1096/fj.201900725R.
102. Suzuki T., Fujiwara S., Kinoshita S., **Butovich I.A.**
Cyclic Change of Fatty Acid Composition in Meibum During the Menstrual Cycle.
Invest Ophthalmol Vis Sci. (2019); Apr 1;60(5):1724-1733. doi: 10.1167/iovs.18-26390.
101. **Butovich I.A.**, McMahon A., Wojtowicz J.C, Bhat N., Wilkerson A.
Effects of sex (or lack thereof) on meibogenesis in mice (*Mus musculus*): Comparative evaluation of lipidomes and transcriptomes of male and female tarsal plates.
Ocul Surf. (2019) Oct;17(4):793-808. doi: 10.1016/j.jtos.2019.03.002.
100. **Butovich I.A.**
Meibomian glands, meibum, and meibogenesis.
Exp Eye Res. (2017);163:2-16.
99. **Butovich I.A.**, McMahon A., Wojtowicz J.C, Lin F., Mancini R., Itani K.
Dissecting lipid metabolism in meibomian glands of humans and mice: An integrative study reveals a network of metabolic reactions not duplicated in other tissues.
Biochim Biophys Acta (2016);1861(6):538-553.
98. Wojtowicz J.C., **Butovich I.A.**, McMahon A., Hogan R.N., Itani K.M., Mancini R., Molai M., Linsenhardt E. Time-dependent degenerative transformations in the lipidome of chalazia.
Exp Eye Res. (2014);127:261-269.
97. McMahon A., Lu H., **Butovich I.A.**
A role for ELOVL4 in the mouse meibomian gland and sebocytes cell biology.
Invest Ophthalmol Vis Sci. (2014);55(5):2832-2840.
96. **Butovich I.A.**, Lu H., McMahon A., Ketelson H., Senchyna M., Meadows D., Campbell E., Molai M., Linsenhardt E.
Biophysical and morphological evaluation of human normal and dry eye meibum using hot stage polarized light microscopy.
Invest Ophthalmol Vis Sci. (2014);55(1):87-101.

95. **Butovich I.A.**
Tear film lipids.
Exp Eye Res. (2013);117:4-27.
94. Lu H., Wojtowicz J.C., **Butovich I.A.**
Differential scanning microcalorimetric evaluation of human meibomian gland secretions and model lipid mixtures: transition temperatures and cooperativity of melting.
Chem Phys Lipids. (2013);170-171:55-64.
93. McMahon A., Lu H., **Butovich I.A.**
The spectrophotometric sulfo-phospho-vanillin assessment of total lipids in human meibomian gland secretions.
Lipids. (2013); 48(5):513-525.
92. Arciniega J.C., Uchiyama E., **Butovich I.A.**
Disruption and destabilization of meibomian lipid films caused by increasing amounts of ceramides and cholesterol.
Invest Ophthalmol Vis Sci. (2013);54(2):1352-1360.
91. **Butovich I.A.**, Lu H., McMahon A., Eule J.C.
Toward an animal model of the human tear film: biochemical comparison of the mouse, canine, rabbit, and human meibomian lipidomes.
Invest Ophthalmol Vis Sci. (2012);53(11):6881-6896.
90. **Butovich I.A.**, Arciniega J.C., Lu H., Molai M.
Evaluation and quantitation of intact wax esters of human meibum by gas-liquid chromatography-ion trap mass spectrometry.
Invest Ophthalmol Vis Sci. (2012);53(7):3766-3781.
89. Arciniega J.C., Nadji E.J., **Butovich I.A.**
Effects of free fatty acids on meibomian lipid films.
Exp Eye Res. (2011); 93(4):452-459.
88. **Butovich I.A.**, Borowiak A.M., Eule J.C.
Comparative HPLC-MSⁿ analysis of canine and human meibomian lipidomes: many similarities, a few differences.
Scientific Reports. (2011);1, doi:10.1038/srep00024.
87. **Butovich I.A.**
Lipidomics of human Meibomian gland secretions: Chemistry, biophysics, and physiological role of Meibomian lipids.
Prog Lipid Res. (2011);50(3):278-301.
86. Green-Church K.B., **Butovich I.**, Willcox M., Borchman D., Paulsen F., Barabino S., Glasgow B.J.
The international workshop on meibomian gland dysfunction: report of the subcommittee on tear film lipids and lipid-protein interactions in health and disease.
Invest Ophthalmol Vis Sci. (2011);52(4):1979-1993.

85. McMahon A., **Butovich I.A.**, Kedzierski W.
Epidermal expression of an Elov14 transgene rescues neonatal lethality of homozygous Stargardt disease-3 mice.
J Lipid Res. (2011);52(6):1128-1138.
84. **Butovich I.A.**
On the presence of (O-acyl)-omega-hydroxy fatty acids and of their esters in human meibomian gland secretions.
Invest Ophthalmol Vis Sci. (2011);52(1):639-641.
83. **Butovich I.A.**
On the presence and role of polar lipids in meibum.
Invest Ophthalmol Vis Sci. (2010);51(12):6908-6910.
82. Wojtowicz J.C., **Butovich I.**, Uchiyama E., Aronowicz J., Agee S, McCulley J.P.
Pilot, prospective, randomized, double-masked, placebo-controlled clinical trial of an omega-3 supplement for dry eye.
Cornea (2011);30(3):308-314.
81. **Butovich I.A.**, Arciniega J.C., Wojtowicz J.C.
Meibomian lipid films and the impact of temperature.
Invest Ophthalmol Vis Sci. (2010);51(11):5508-5518.
80. **Butovich I.A.**
Fatty acid composition of cholesteryl esters of human meibomian gland secretions.
Steroids (2010);75(10):726-733.
79. **Butovich I.A.**
The Meibomian puzzle: combining pieces together
Progr Retin Eye Res. (2009);28(6):483-498.
78. **Butovich I.A.**
Lipidomic Analysis of Human Meibum Using HPLC-MSⁿ
Methods Mol Biol. (2009);579:221-246.
77. **Butovich I.A.**, Wojtowicz J., Molai M.
Human tear film and meibum. 1. Very long chain wax esters and (O-acyl)-omega-hydroxy fatty acids of meibum.
J Lipid Res. (2009);50(12):2471-2485.
76. **Butovich I.A.**
Cholesteryl esters as a depot for very long chain fatty acids in human meibum.
J Lipid Res. (2009);50(3):501-513.
75. Wojtowicz J.C., **Butovich I.A.**, McCulley J.P.
Historical brief on composition of human meibum lipids.
Ocul Surf. (2009);7(3):145-153.
74. Millar T.J., Mudgil P, **Butovich I.A.**, Palaniappan C.K.
Adsorption of human tear lipocalin to human Meibomian lipid films.
Invest Ophthalmol Vis Sci. (2009);50(1):140-151.

73. Uchiyama E., Di Pascuale M.A., **Butovich I.A.**, McCulley J.P.
Impact on ocular surface evaporation of an artificial tear solution containing hydroxypropyl guar.
Eye Contact Lens. (2008);34(6):331-334.
72. **Butovich I.A.**
On the lipid composition of human meibum and tears: Comparative analysis of nonpolar lipids.
Invest Ophthalmol Vis Sci. (2008);49(9):3779-3789.
71. **Butovich I.A.**, Millar T.J., Ham B.M.
Understanding and analyzing meibomian lipids – a review.
Curr Eye Res. (2008);33(5):405-420.
70. **Butovich I.A.**, Lukyanova S.M.
Inhibition of lipoxygenases and cyclooxygenases by linoleyl hydroxamic acid: comparative in vitro studies.
J Lipid Res. (2008);49(6):1284-1294.
69. **Butovich I.A.**, Uchiyama E., McCulley J.P.
Lipids of human meibum: Mass-spectrometric analysis and structural elucidation.
J Lipid Res. (2007); 48(10):2220-2235.
68. **Butovich I.A.**, Uchiyama E., Di Pascuale M., McCulley J.P.
Liquid Chromatography-Mass Spectrometric Analysis of Lipids Present in Human Meibomian Gland Secretions.
Lipids (2007); 42(8):765-776.
67. Gipson I.K., Argueso P., Beuerman R., Bonini S., **Butovich I.**, Dana R., Dartt D., Gamache D., Ham B., Jumblatt M., Korb D., Kruse F., Ogawa Y., Paulsen F., Stern M., Sweeney D.F., Tiffany J., Ubels J., Willcox M.
Research in dry eye: Report of the Research Subcommittee of the International Dry Eye WorkShop (2007)
Ocul Surf. (2007);5(2):179-193.
66. McMahon A., **Butovich I.A.**, Mata N.L., Klein M., Ritter R. 3rd, Richardson J., Birch D.G., Edwards A.O., Kedzierski W.
Retinal pathology and skin barrier defect in mice carrying a Stargardt disease-3 mutation in elongase of very long chain fatty acids-4.
Mol Vis. (2007);13:258-272.
65. **Butovich I.A.**, Lukyanova S.M., Bachmann C.
Dihydroydocosahexaenoic acids of the neuroprotectin D family: Synthesis, structure and inhibition of human 5-lipoxygenase.
J Lipid Res. (2006);47(11):2462-2474.
64. McCulley J.P., Aronowicz J.D., Uchiyama E., Shine W.E., **Butovich I.A.**
Correlations in a change in aqueous tear evaporation with a change in relative humidity and the impact.
Am J Ophthalmol. (2006);141(4):758-760.

63. **Butovich I.A.**

A one-step method of 10,17-dihydro(pero)xydocosa-hexa-4Z,7Z,11E,13Z,15E,19Z-enoic acid synthesis by soybean LOX.

J Lipid Res. (2006);47(4): 854-863.

62. McCulley J.P., Uchiyama E., Aronowicz J.D., **Butovich I.A.**

Impact of evaporation on aqueous tear loss.

Trans Am Ophthalmol Soc. (2006);104:121-128.

61. **Butovich I.A.**

On the structure and synthesis of neuroprotectin D1, a novel anti-inflammatory compound of the docosa-hexaenoic acid family.

J Lipid Res. (2005);46(11):2311-2314.

60. **Butovich I.A.**, Hamberg M., Rådmark O.

Novel oxylipins formed from docosa-hexaenoic acid – 10(S)-hydroxydocosa-hexaenoic acid and 10,20-dihydroxydocosa-hexaenoic acid.

Lipids (2005);40(3):249-257.

59. **Butovich I.A.**, Reddy C.C.

Inhibition of potato tuber lipoxygenase by linoleyl hydroxamic acid: kinetic and EPR spectral evidences for a two-step reaction.

Biochem J. (2002);365(Pt 3):865-871.

58. Sánchez C., **Butovich I.**, Braña A.F., Rohr J., Méndez C., Salas J.A.

The biosynthetic gene cluster for the antitumor rebeccamycin: characterization and generation of indolocarbazole derivatives.

Chem Biol (2002);9(April):519-531.

57. **Butovich I.A.**, Kharchenko O.V., Naboka Iu.N., Kazachkov M.G.

Characteristics of the aggregative state of the substrate in the reaction of 5-lipoxygenase oxidation of linoleic acid.

Ukr Biochem J. (2001);73(2):39-43.

56. **Butovich I.A.**, Reddy C.C.

Enzyme-catalyzed and enzyme-triggered pathways in dioxygenation of 1-monolinoleoyl-rac-glycerol by potato tuber lipoxygenase.

Biochim Biophys Acta (2001);1546(2):379-398.

55. **Butovich I.A.**, Pechous S., Reddy C.C.

Characterization of non-heme iron center in potato tuber lipoxygenase by EPR spectroscopy.

FASEB J. (2001);15(5):876.

54. **Butovich I.A.**, Lukyanova S.M., Reddy C.C.

Oxidation of linoleyl alcohol by potato tuber lipoxygenase: Kinetics and positional, stereo- and geometrical (cis,trans) specificity of the reaction.

Arch Biochem Biophys. (2000);378(1):65-77.

53. **Butovich I.A.**

Enzyme-substrate interactions in lipoxygenase oxidation of ionizable and non-ionizable substrates – linoleic acid and linoleyl alcohol.

Proc Natl Acad Sci of Ukraine (2000);N8:155-160.

52. Kvochina L.I., Tumanovs'ka L.V., Marchenko H.I., Moibenko O.O., **Butovych I.A.**

The protective effect of omega-3 polyunsaturated fatty acids on the activity of the isolated rat heart during myocardial ischemia-reperfusion.

Fiziol Zh. (2000);46(2):98-108.

51. Kharchenko O.V., Kulinichenko H.I., **Butovych I.A.**

Kinetic mechanisms of linoleic acid oxidation by 5-lipoxygenase from *Solanum tuberosum* L.

Ukr Biochem J. (1999);71(4):40-44.

50. Kharchenko O.V., Cernjuk, V.N., **Butovich I.A.**

Inhibition of porcine leukocyte 12-lipoxygenase oxidation of linoleic acid by linoleyl hydroxamic acid.

Ukr Biochem J. (1999);71(1):35-40.

49. **Butovich I.A.**, Kharchenko O.V.

The role of phospholipids in regulation of activity of porcine leukocyte 12-lipoxygenase.

Ukr Biochem J. (1999);71(1):30-34.

48. **Butovich I.A.**, Lukyanova S.M., Reddy C.C.

Oxidation of linoleyl alcohol by potato tuber lipoxygenase: possible mechanism and the role of carboxylic group in substrate binding.

Biochem Biophys Res Commun. (1998);249(2):344-349.

47. Kukoba T.V., Seredenko M.M., **Butovych I.A.**, Moibenko O.O.

The effect of linoleyl hydroxamic acid on lipid peroxidation processes and on the enzymatic activity of the antioxidant system in rats under hypoxia.

Fiziol Zh. (1998);44(5-6):43-48.

46. Parshikova T.V., Mogilevich T.V., Ogi S.A., **Butovich I.A.**

The influence of 13(S)-hydroxy linoleic acid on the growth of barley (*Hordeum vulgare*, L.).

Physiol Biochem Cult Plants (1997);29(6):435-439.

45. Bondarenko L.B., Oghiy S.A., **Butovich I.A.**

Fatty acids hydroxamic derivatives as inhibitors of 5-lipoxygenase.

Adv Exp Med Biol. (1997);407:471-475.

44. **Butovich I.A.**, Babenko V.M.

A new biomimetic system for investigation of lipoxygenase reaction mechanism.

Prost Leukotrienes and Essential Fatty Acids. 1996;55(1):129

43. Brovkovich V.M., Moibenko A.A., **Butovich I.A.**, Brovkovich S.D., Ogi S.A.

Effect of lipoxygenase derivatives of linoleic acid on functional activity of neutrophils.

Ukr Biochem J. (1996);68(3):79-84.

42. Bondarenko L.B., Kharchenko O.V., **Butovich I.A.**

Combined effect of phosphatidyl inositol and linoleate hydroxamic acid on 5-lipoxygenase.

Pharm Chem J. (1996);30(3):175-177.

41. Bondarenko L.B., Ogi S.A., Tsernyuk V.N., **Butovich I.A.**
Hydroxamic derivatives of saturated fatty acids as inhibitors of 5-lipoxygenase.
Biopolymers and the Cell. (1996);12(2):29-33.
40. Bondarenko L.B., Ogi S.A., **Butovich I.A.**
Effects of linolenic acid and its hydroxamic derivative on 5-lipoxygenase.
Biopolymers and the Cell. (1996);12(2):34-37.
39. Mogilevich T.V., Parshikova T.V., Babenko V.M., Ogi S.A., Kukhar V.P., **Butovich I.A.**
Activation of oxidation of linoleic acid by 5-lipoxygenase from barley by phosphatidyl inositol.
Proc Natl Acad Sci of Ukraine. (1996);7:120-124.
38. Liu B, Khan W.A., Hannun Y.A., Timar J., Taylor J.D., Lundy S., **Butovich I.**, Honn K.V.
12(S)-hydroxyeicosatetraenoic acid and 13(S)-hydroxyoctadecadienoic acid regulation of protein kinase C- α in melanoma cells: role of receptor-mediated hydrolysis of inositol phospholipids.
Proc Natl Acad Sci USA. (1995);92(20):9323-9327.
37. Cherednichenko G.A., Moibenko A.A., **Butovich I.A.**, Ogi S.A.
Effect of 13(S)-HPODE, a lipoxygenase product of linoleic acid, on calcium transport and Na,K-ATPase activity in the myocardial sarcolemma.
Bull Exp Biol Med. (1995);120(9):255-258.
36. Bondarenko L.B., Kharchenko O.V., **Butovich I.A.**
Effect of 1,25-dihydroxyvitamin D₃ on 5-lipoxygenase activity.
Vopr Med Khim. (1995);41(3):29-31.
35. **Butovich I.A.**, Kharchenko O.V., Babenko V.M.
On the interfacial phenomena in lipoxygenase catalysis.
Adv Prostaglandin Thromboxane Leukotriene Res. (1995);23:159-161.
34. Bondarenko L.B., Kharchenko O.V., **Butovich I.A.**
Kinetic characteristics of 5-lipoxygenase inhibition by 1,25-dihydroxyvitamin D₃.
Pharm Chem J. (1995);29(5):313-315.
33. Mogilevich T.V., Ogi S.A., Kukhar V.P., **Butovich I.A.**
Oxidation of linoleic acid by immobilized lipoxygenase in water and water/organic mixtures.
Proc Natl Acad Sci. of Ukraine. (1995);7:108-111.
32. Bondarenko L.B., Kharchenko O.V., **Butovich I.A.**
Combined effect of phosphatidyl choline and linoleyl hydroxamic acid on 5-lipoxygenase activity.
Pharm Chem J. (1995) 29(6):392-394.
31. Honn K.V., Tang D.G., Gao X., **Butovich I.A.**, Liu B., Timar J., Hagmann W.
12-lipoxygenases and 12(S)-HETE: role in cancer metastasis.
Cancer Metastasis Rev. (1994);13(3-4):365-396.
30. Bondarenko L.B., Kharchenko O.V., **Butovich I.A.**
A hormonally-active form of vitamin D₃ – 1,25-dihydroxyvitamin D₃ – an inhibitor of leukocyte lipoxygenase.
Vopr Med Khim. (1994);40(5):2-4.

29. **Butovich I.A.**, Bondarenko L.B., Kutnyaya M.Yu., Naboka Yu.M., Ogi S.A.
Influence of proteins on catalytic properties of 15-lipoxygenase in the reaction of linoleic acid oxidation.
Biotechnology. (1994); N1:36-38.
28. Moibenko A.A., Grabovskii L.A., Kotsiuruba V., Bulakh V.N., Tumanovskaia L., Azarov V.I.,
Butovich I.A.
The mechanisms of the changes in coronary vascular resistance in anaphylactic shock.
Fiziol ZhIm I. M. Sechenova. (1994);80(2):77-82.
27. **Butovich I.A.**, Kharchenko O.V., Bondarenko L.B., Babenko V.M., Livarchuk L.V.
Linoleylhydroxamate as 5-lipoxygenase inhibitor.
Biochemistry (Moscow) (1994);59(6):597-600.
26. **Butovich I.A.**, Mogilevich T.V., Ogi S.A., Kutnyaya M.Yu., Kukhar V.P.
Catalytic properties of soybean lipoxygenase immobilized on modified silica.
Rus J Bioorg Chem. (1994);20(10):615-619.
25. Marchenko H.I., Kotsiuruba V.M., **Butovych I.A.**, Sorochnynskiy A.E., Zrazhevska V.K., Tumanovska L.V.
The correction of disorders in arachidonic acid metabolism in coronary spasm of an immune origin.
Fiziol Zh. (1994);40(3-4):81-87.
24. Piletskii S.A., **Butovich I.A.**, Kukhar V.P.
Construction of molecular sensors based on substrate-selective polymeric membranes.
J Analyt Chem. (USSR). (1992);47(9):1231-1234.
23. **Butovich I.A.**, Tsys E.V., Mogilevich T.V.
Oxidation of linoleic acid and methyl linoleate by potato and soybean lipoxygenases: a comparative study.
Biochemistry (Moscow). (1992);57(10):1012-1019.
22. **Butovich I.A.**
Study by reverse-phase high-performance liquid chromatography of the adsorption of linoleic acid and of methyl linoleate on the interface between polar and non-polar phases.
Russ J Phys Chem. (1992);66(7):988-991.
21. **Butovich I.A.**, Parshikova T.V., Babenko V., Livarchuk L., Kharchenko O.V., Kukhar V.P.
Regulatory role of phospholipids in linoleic acid oxidation by 5-lipoxygenase.
Biol Membr. (1992);9(6):611-616.
20. **Butovich I.A.**, Tsys E.V., Mogilevich T.V., Kukhar V.P.
Influence of physicochemical factors on lipoxygenase oxidation of linoleic acid.
Bioorg Chem. (USSR). (1991);17(9):1273-1280.
19. **Butovich I.A.**, Soloshonok V.A., Kukhar V.P.
The unusual action of (R,S)-2-hydroxy-2-trifluoromethyl-trans-n-octadec-4-enoic acid on 5-lipoxygenase.
Eur J Biochem. (1991);199(1):153-165.

18. Soloshonok V.A., Rozhenko A.B., **Butovich I.A.**, Kukhar V.P.
Reactions of methyl trifluoropyruvate with terminal olefins.
J Org Chem USSR (1991);26(10):1771-1775.
17. **Butovich I.A.**, Kukhar V.P.
Amphiphilic aliphatic acids as activators of 5-lipoxygenase. The adsorption-micellar regulatory mechanism.
Proc Natl Acad of the USSR. (1991);316(6):1486-1490.
16. **Butovich I.A.**, Babenko V.M., Livarchuk L.V, Mogilevich T.V., Kukhar V.P.
Activation of the oxidation of linoleic acid by 5-lipoxygenase from potato tubers, induced by phosphatidic acid.
Biochemistry (Moscow). (1991);56(4):744-747.
15. **Butovich I.A.**, Bridnya V.P., Kukhar V.P.
Linoleate-hydroxamic acid: a suicide inhibitor of lipoxygenase.
Biochemistry (Moscow). (1991);55(7, part 1):908-912.
14. **Butovich I.A.**, Soloshonok V.A., Solodenko V.A., Kukhar V.P
Activation of 5-lipoxygenase by lipophilic n-alkyl-containing acids – an allosteric process.
Bioorg Khim. (1990);16(2):270-271.
13. **Butovich I.A.**, Kukhar V.P.
Potato 5-lipoxygenase. Kinetics of linoleic acid oxidation.
Ukr Biochem J. (1989);61(2):106-108.
12. **Butovich I.A.**, Kukhar V.P., Bridnya V.P., Radchenko O.A., Kotlinskaya A.
Polyfluorosubstituted aldehydic carboxylic and hydroxamic acids as new inhibitors of lipoxygenases.
Proc Natl Acad Sci of Ukraine, ser. B. (1989);5:55-58.
11. **Butovich I.A.**, Mogilevich T.V., Kukhar V.P.
Activity of lipoxygenase incorporated into reversed micelles of aerosol OT in octane.
Ukr Biochem J. (1989);61(2):54-59.
10. **Butovich I.A.**, Kukhar V.P., Tsys E.V., Bridnya V.P.
Method of preparation of hydroperoxides of polyunsaturated fatty acids.
Patent of the USSR (1988) N 1631086.
9. Kornilov A.M., Sorochinskii A.E., **Butovich I.A.**, Kukhar V.P.
Catalytic asymmetric epoxidation of methyl-7-oxy-5e-heptenoate.
Zh Org Khim. (1987);23(11):2470-2471.
8. **Butovich I.A.**, Tertykh V.A.
Adsorption of proteins at the surface of chemically modified silica.
Theor Exp Chem. (1987);23(11):237-241.
7. **Butovich I.A.**, Semichaevskii V.D.
Catalytic properties of extracellular phenol oxidases from the higher basidiomycete *Pleurotus ostreatus* (Fr.) Kumm.
Ukr Biochem J. (1986);58(4):18-26.

6. **Butovich I.A.**

Stability and catalytic properties of o-diphenol oxidase. 1. Oxidation of o-diphenols.
Ukr Biochem J. (1986);58(1):10-16.

5. **Butovich I.A.**

Stability and catalytic properties of o-diphenol oxidase. 2. Oxidation of mono-phenols.
Ukr Biochem J. (1986);58(1):16-21.

4. **Butovich I.A.**, Tertykh V.A.

Inactivation of o-diphenoloxidase in the pyrocatechol oxidation reaction.
Ukr Biochem J. (1984);56(5):527-532.

3. **Butovich I.A.**, Tertykh V.A.

A method for determining the o-diphenoloxidase activity in the pyrocatechol oxidation reaction.
Ukr Biochem J. (1984);56(4):437-441.

2. **Butovich I.A.**, Yanishpolskii V.V.

Immobilized o-diphenoloxidase in analysis of aqueous solutions of phenols.
Adsorption and Adsorbents. (1984);12:71-74.

1. **Butovich I.A.**, Semichaevskii V.D., Tsarevich N.V.

Phenoloxidizing ability of extracellular enzymes of *Pleurotus ostreatus* (Fr. Kumm).
Proc Natl Acad Sci of Ukraine, ser. B. (1984);10:80-83.