ЕВРОПЕЙСКИ СЪЮЗ
ЕВРОПЕЙСКИ СТРУКТУРНИ И ИНВЕСТИЦИОННИ ФОНДОВЕ

ОПЕРАТИВНА ПРОГРАМА
НАУКА И ОБРАЗОВАНИЕ ЗА ИНТЕЛИГЕНТЕН РАСТЕЖ

VII National Conference with International Participation "Morphological Days", June 8 – 10, Sofia, Bulgaria

PROGRAM

Friday, June 8th

12.00 - 14.00 Registration

14.30 Opening

15.00 Plenary Session	*Chairs: V. Ovtscharoff, N. Atanassova*
15.00	**Morphological and functional development of the Leydig cell lineage** K. Teerds, *Netherlands*
15.40	**The pericytes are the true pluripotent adult stem cells in vertebrates** M. Davidoff, *Germany*
16.20	**Problems in the brain sex differentiation** V. Ovtscharoff, *Sofia*

First Session 17.00 – 18.10	*Chairs: D. Kadiysky, M. Davidoff*
17.00	**Immunohistochemical localization of nitrergic structures in the carotid body of normotensive and spontaneously hypertensive rats** N. Lazarov, D. Atanasova, N. Dimitrov, A. Dandov, T. Kirov, *Sofia*
17.20	**Egyptian fetal growth curves can be used whether the mother is sure and unsure of her date** Osama Azmy, *Egypt*
17.40	**Topographic distribution of CD146 in developing human kidney** I. Rančić, V. Petrović, G. Rančić, A. Petrović, P. Atanasova, G. Chaldakov, *Serbia*
17.50	**Contribution of megakaryocytes to joint inflammation provoked in two mouse models of arthritis** P. Ganova, V. Gyurkovska, L. Belenska-Todorova, N. Ivanovska, *Sofia*
18.00	**The significance of anticardiolipin antibodies in patients with vasculitis** M. Gantcheva, *Sofia*

19.00 Welcome Dinner – Restaurant "Red Coral Kitchen"

Научният форум се осъществява по Проект ***BG05M2OP001-2.009-0019-C01/02.06.2017 г.****, финансиран от Оперативна програма „Наука и образование за интелигентен растеж", съфинансирана от Европейския съюз чрез Европейскитеструктурни и инвестиционни фондове.*

	6	**Protein YKL-40 in cerebrospinal fluid in traumatic brain injury** M.Kazakova, G. Pavlov, D. Dikov, K. Simitchiev, V. Dichev, Ch. Stefanov, V. Sarafian, *Plovdiv*
	7	**Biliary tract reconstruction in rats by small caliber artery grafts of decellularized human placenta** M. Kakabadze, K. Tsomaia, E. Azmaipharashvili, K. Chakhunashvili, Z. Kakabadze, *Georgia*
	8	**Associating liver partition and portal vein ligation for staged hepatectomy: liver regeneration with- and without stem cells supplementation** K. Tsomaia, *Georgia*
	9	**The activity of enzymes involved in energy supply of cardiomyocytes in endurance trained rats is androgen dependent** S. Delchev, F. Gerginska, K. Georgieva, *Plovdiv*
	10	**Age-related changes in rat thymus connective tissue influenced by Aronia melanocarpa** E. Daskalova , S. Delchev, L. Vladimirova-Kitova, P. Denev, S. Valcheva-Kuzmanova, S. Kitov, M. Kanarev, *Plovdiv*
	11	**Inflammatory markers in the testis by experimental model of high lipid diet** M. Pencheva, Y. Koeva, E. Suvandjieva, I. Dimitrov, D. Ankova, P. Rashev, *Plovdiv*

12.10 – 13.00 Cocktail

Fourth Session 13.00		***Chairs: G. Rancic, S. Delchev***
13.00 – 14.30	1	**Novel optical method for visualization of intracerebral grafts** N. Tomov, L. Surchev, *Stara Zagora*
	2	**Experimental acupuncture of the human ST36 acupoint** N. Dimitrov, D. Atanasova, N. Tomov, S. Hamza, D. Sivrev, *Stara Zagora*
	3	**Application of left circular polarized light for polymerization of Biodur P40** J. Stoyanov, A. Georgieva, *Stara Zagora*
	4	**Use of high pressure for retrograde forced impregnation of lung** A. Georgieva, J. Stoyanov, *Stara Zagora*
	5	Arterial vascularization of pig's auditory tube - a corrosion cast study N. Tsandev, A. Vodenicharov, I. Stefanov, *Stara Zagora*
	6	**Spiral structure of the skeleton- osteoporosis deformation** N. Pirovski, Y. Staykova, *Stara Zagora*
	7	**Human anatomy for the artist and scenography** N. Penkova, D. Vodenicharov, P. Atanassova, *Plovdiv*
	8	**Study of fingerprint patterns in left-handed and right handed Bulgarian individuals** N. Petrova, E. Andreenko, C. Iglesias, S. Sivkov, *Plovdiv*
	9	**Secular changes of body composition and body nutritional status in children and adolescents from Smolyan region, Bulgaria (1997-2017)** S. Mladenova, T.-M. Hristova, S. Uzunova, *Plovdiv*

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Age-related changes in rat thymus connective tissue influenced by *Aronia melanocarpa*

E. Daskalova[1], S. Delchev[1], L. Vladimirova-Kitova[2], P. Denev [3] ,

S.Valcheva-Kuzmanova[4] , S. Kitov[5], M. Kanarev[5]

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[2]Clinic of Cardiology, Medical University - Plovdiv, Bulgaria

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[4] Department of Pharmacology and Clinical Pharmacology and Therapeutics, Faculty of Medicine, Medical University Prof. Dr. Paraskev Stoyanov, Varna, Bulgaria

[5] Student of medicine in Medical University – Plovdiv

Introduction

- Aging is a slow and continuous process compromising the morphofunctional characteristics of different organs and systems.
- The chronic low-grade inflammation and tissue fibrosis are the key features of the aging process in all organisms.
- Inflammageing is the primary risk factor for major human chronic diseases, including cardiovascular disorders, cancer, type 2 diabetes and neurodegenerative diseases.
- Flavonoids are powerful antioxidant nutrients which can influence the activities of numerous cell types, including mast cells, T and B lymphocytes, macrophages and others.
- The anthocyanin-rich chokeberry (*Aronia melanocarpa)* possessess one of the highest antioxidant activities among plant foods as confirmed by several different methods.

Aim, Material and Methods

- **Aim:** to determine the effect of Aronia melanocarpa fruit juice on macrophages, mast cells (MCs) and connective tissue distribution associated with the age-related tissue remodeling of the rat thymus.
- **Animals – male Wistar rats (n=18).**

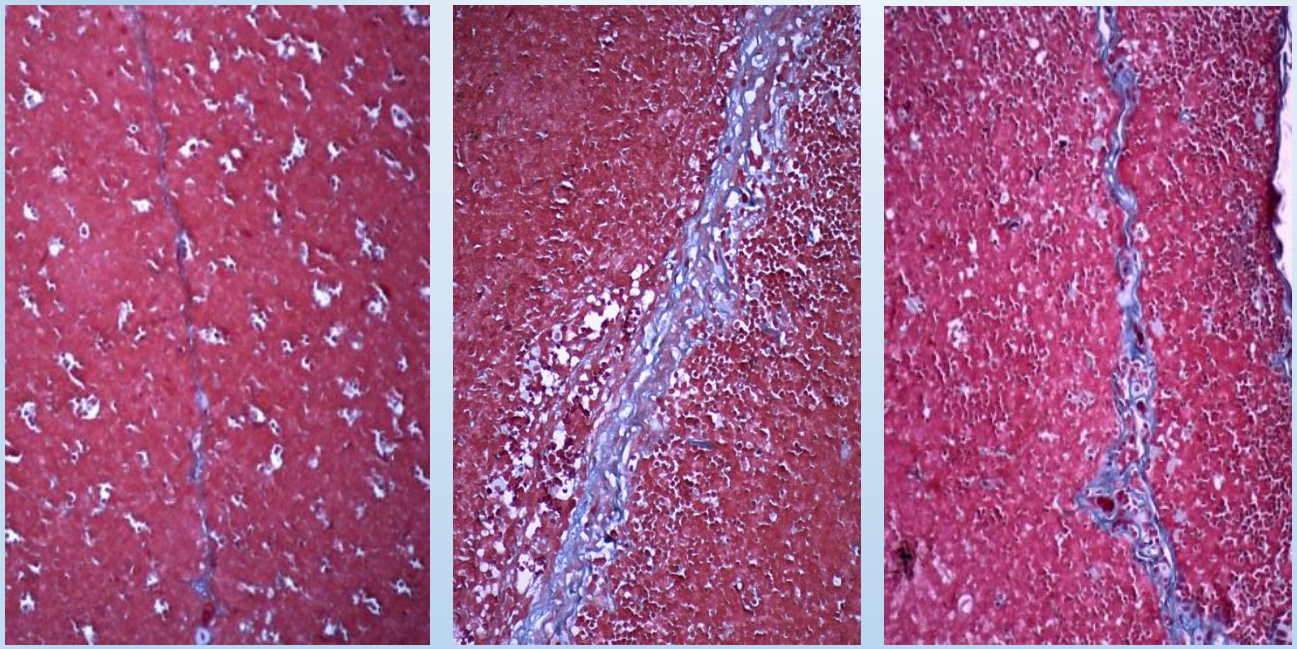
GROUP	N	AGE months	BODY WEIGHT (g)
CY – Young controls	6	2	100 ± 10
CO – Middle-aged controls	6	12	350 ± 50
A –*Aronia* juice supplemented at a dose of 10 ml/kg daily	6	12	350 ± 50

- **Aronia melanocarpa fruit juice** as functional beverage was supplied by Vitanea Ltd and ITC Ltd.

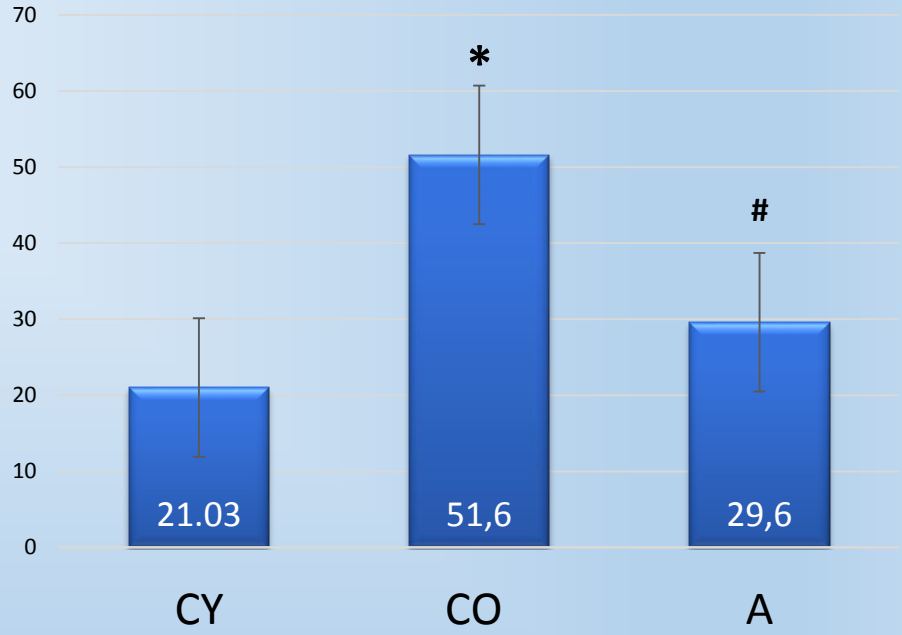
- **Histological assay**
  - Azan staining
  - Toluidine blau staining
- **Immunohistochemistry**
  - Anti-CD68 monoclonal antibody
- **Morphometric assay**
  - "DP - Soft" 3.2, Olympus, Japan
- **Statistical assay**
  - SPSS 17.0.

Results

Relative distribution of connective tissue in thymic interlobular septa



CY **CO** **A**

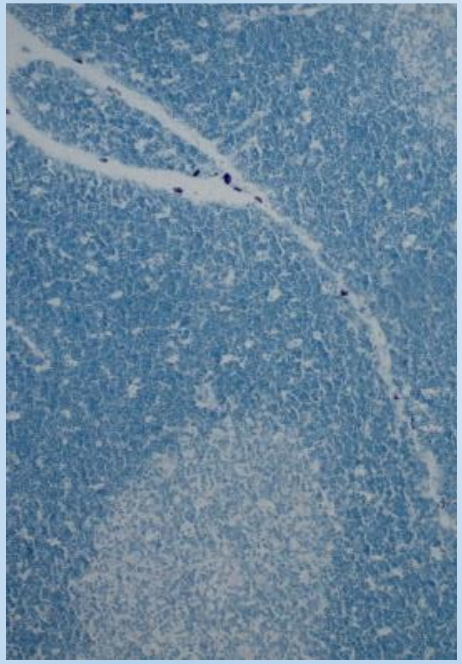


Azan (Heidenhain) staining. Young controls (CY), middle-aged controls (CO), Aronia melanocarpa supplemented group (A) magn. x 200;

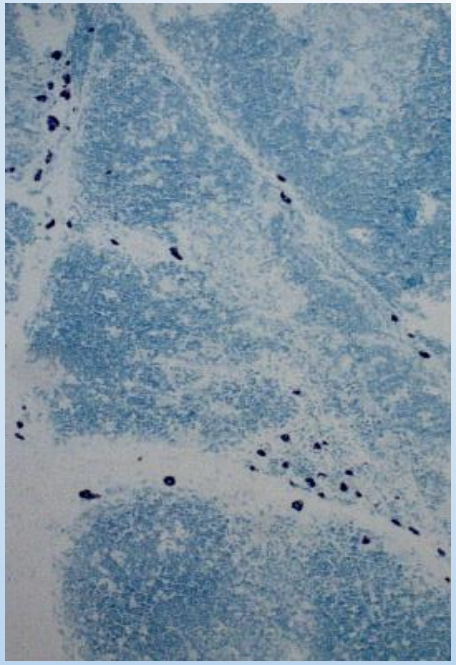
Relative distribution of connective tissue in thymic septa
* CO vs. CY, $p<0.05$;
# A vs. CO, $p<0.05$

Results

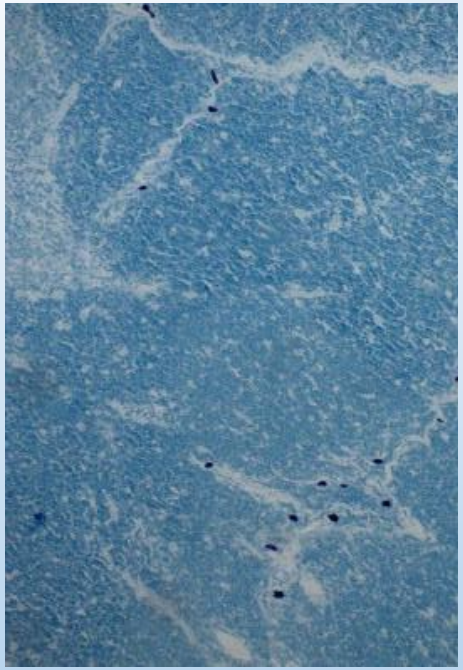
Distribution of mast cells in thymic interlobular septa



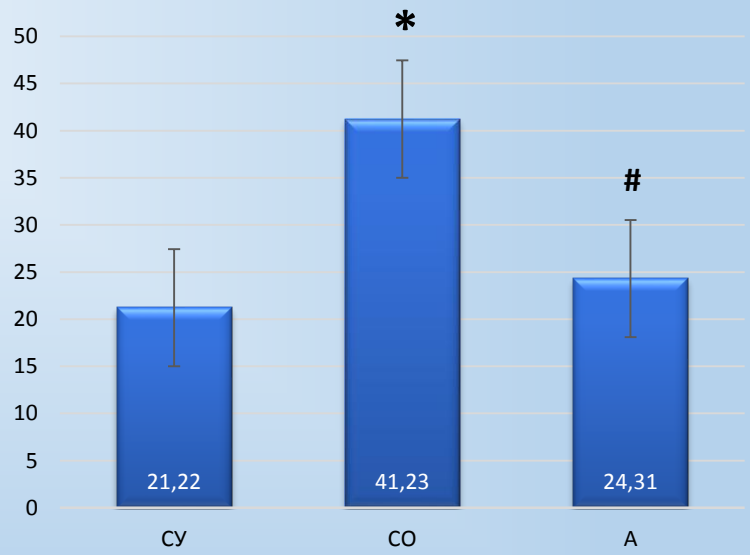
CY



CO



A

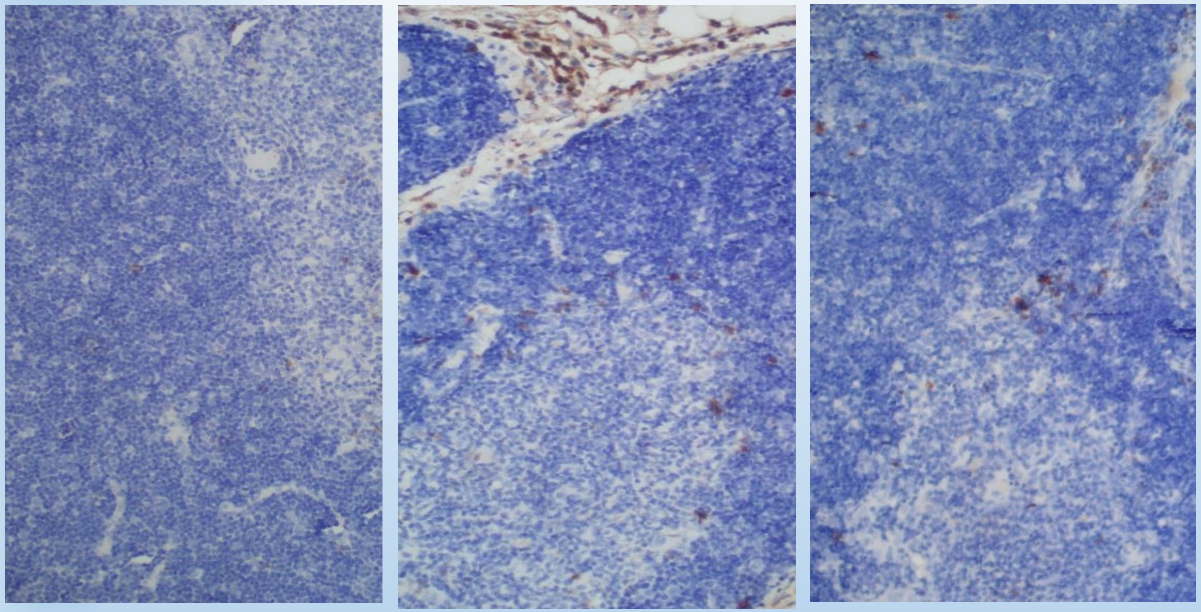


Toluidine blue staining. Young controls (CY), middle-aged controls (CO), *Aronia melanocarpa* supplemented group (A), magn. x 200;

Mean distribution of mast cells per cut in thymic septa.
*CY vs. CO, $p<0.05$;
A vs. CO, $p<0.05$

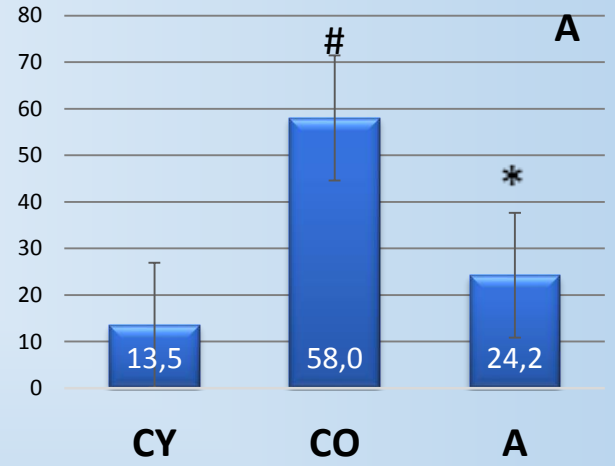
Results

Distribution of macrophages in thymic cortex and medulla



CY CO A

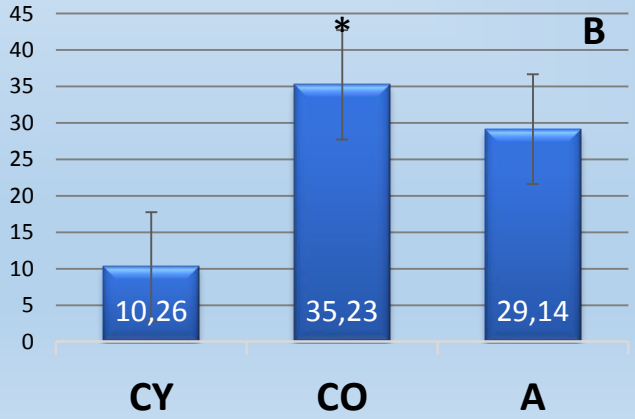
CD68 immunoreaction in rat thymus, magn. x 400



A: CD68 positive cells medulla

CO vs. CY, p<0.05;

* A vs. CO , p<0.05



B: CD68 positive cells cortex

*CO vs. CY, p<0.05

Discussion and Conclusions

- The increased number of mast cells and the augmented amount of connective tissue in the thymic interlobular septa, as well as the increased number of macrophages in the thymus parenchyma, are a manifestation of age-related changes. These findings can be explained by the development of an age-related condition of chronic low grade inflammation.
- The potent antioxidant and anti-inflammatory properties of polyphenols - the major biologically active constituents of the *Aronia melanocarpa* fruits, are the likely cause of a significant reduction of number of mast cells and macrophages and relative distribution of connective tissue in the thymic stroma and parenchyme in middle-aged rats.
- *Aronia melanocarpa juice* supplementation for 3-months succesfuly counteracts age-related changes of some stromal components (mast cells, macrophages and connective tissue) in rat thymus.

This work was funded by project DN 09/20 "Integrated approach for improving the quality, organoleptic properties and biological activity of new functional foods from chokeberry (*Aronia melanocarpa*) by copigmentation and synergy in antioxidant activity." of the **Bulgarian National Science Fund**.