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CONTENT

I. FOOD INGREDIENTS, FOOD STRUCTURE, ADDITIVES, SUPPLEMENTS, FORTIFICATION

MINERAL COMPOSITION OF FRESH COW'S MILK AND THE IMPORTANCE OF MINERALS IN THE HUMAN DIET

Indrit Loshi, Egzon Nikqi, Jasenka Gajdoš Kljusurić, Vesna Antoska Knights 17

A COMPREHENSIVE OVERVIEW OF CANNABIS NUTRIENT COMPOUNDS: ALTERNATIVES AND CHALLENGES

Mihail Aleksandrov, Viktorija Maksimova, Irena Brchina, Daniela Filipova, Darinka Gorgieva Ackova, Katarina Smilkov 18

II. FOOD PRODUCTION, ENGINEERING, PROCESSING AND SUSTAINABILITY

REVALORIZATION OF FRUIT POMACE: A REVIEW OF RECENT DEVELOPMENTS

Biljana Lončar, Lato Pezo, Vladimir Filipović, Milica Nićetin, Violeta Knežević, Miloš Radosavljević, Ružica Tomičić 23

EFFECTS OF OLEOPROTEAGINOUS SEEDS AS PROTEIN ALTERNATIVE TO SOYBEAN MEAL SUBSTITUTION IN BROILER DIET ON THE INTESTINAL MICROBIAL POPULATIONS AND HEALTH STATUS

Tatiana Dumitra Panaite, Dumitru-Filip Iliescu, Gabriela Maria Cornescu, Mihaela Dumitru, Camelia-Cristina Matache, Dumitru Dragotoiu 25

ENHANCING LIQUID EGGS WITH LIQUID EGG YOLK: A PILOT STUDY

Majd Elayan, Csaba Németh, Munkhnasan Enkhbold, László Friedrich, Adrienn Tóth 27

III. FOOD ANALYSIS, MICROBIOLOGY, CHEMISTRY, BIOCHEMISTRY, SENSORY AND INFORMATION TECHNOLOGY SCIENCES

CHARACTERIZATION OF BIOACTIVE COMPOUNDS IN COFFEE OIL EXTRACTED FROM SPENT COFFEE GROUNDS

Drita Abazi Bajrami, Zimere Saiti Musliji, Arjan Ganiji, Sani Demiri 31

THE EXTRACTION AND BIOLOGICAL ACTIVITY OF SELECTED MALAYSIAN MEDICINAL PLANTS

Raja Nur Asila Binti Raja Mazlan, Melvin Holmes, Evi Paximada, Lisa Marshall 32

ELECTROCOAGULATION FOR D-PINITOL ENRICHMENT FROM CAROB EXTRACT: PLATE SELECTION

Yüksel Alper Kutuk, Hatice Reyhan Oziyci, Mustafa Karhan 34

A NOVEL EVAGREEN REAL-TIME PCR APPROACH TO AUTHENTICATE BACOPA MONNIERI HERBAL PRODUCTS

Rita Biltes, Caterina Villa, Joana Costa, Isabel Mafra 36

BOTANICAL AUTHENTICATION OF CENTELLA ASIATICA HERBAL FOOD PRODUCTS BY A REAL-TIME PCR METHOD

Rita Biltes, Caterina Villa, Joana Costa, Isabel Mafra 38

MILK CHEMICAL COMPOSITION OF PELAGONIAN PRAMENKA SHEEP BREED

Petar Dodovski, Maja Angelovska, Mimi Risteovski, Natasa Pejcinovska, Igor Zdraveski, Nikola Karabolovski, Pance Dameski, Talija Hristovska, Naumovska Simona, Dejan Janevski40

TOTAL POLYPHENOLS, FLAVONOIDS, CAROTENOIDS, TANNINS AND ANTIOXIDANT ACTIVITY OF SOME BITTER CHERRY FRUITS FROM THE DOBRUDJA REGION OF ROMANIA

Sebila Rekanović, Bogdan-Stefan Negreanu-Pirjol, Ticuta Negreanu-Pirjol, Dan Razvan Popoviciu, Ovidiu Oprea, Oana Crăciunescu42

BIOACTIVE COMPOUNDS CONTENT AND TOTAL ANTIOXIDANT CAPACITY OF SOME GREEN MACROALGAE SPECIES ALONG ROMANIAN BLACK SEA COAST

Beyza H. Ulusoy, Fatma Kaya Constantin-Teodor Negreanu-Pirjol, Ticuta Negreanu-Pirjol, Dan Razvan Popoviciu, Bogdan-Stefan Negreanu-Pirjol, Rahela Carpa.....44

EVALUATION OF THE RELATIONSHIP BETWEEN GROUND COFFEE ROAST LEVEL AND QUANTITATIVE PARAMETERS

Laura Zemlicka, Evita Straumite, Ruta Galoburda, Zanda Kruma.....46

IV. FOOD QUALITY AND SAFETY

SENSORY AND PHYSICO-CHEMICAL ANALYZES ON THE QUALITY AND MICROBIOLOGICAL SAFETY OF BREAD TRADE IN KORÇE, ALBANIA

Sulltanë Aļçe, Adrian Maho, Gjergji Mero, Ermira Jashiku, Lenida Suraj51

BIOTECHNOLOGY STUDENTS KNOWLEDGE AND PERCEPTION ON GENETICALLY MODIFIED FOODS

Merita Rumano, Aida Dervishi, Lidia Biraci.....53

THE PHYSICO-CHEMICAL COMPOSITION OF MILK AND THE INFLUENCE OF FOOD AND HYGIENIC ASPECTS ON MILK QUALITY

Valon Shala, Egzon Nikqi, Vesna Antoska Knights55

OUTSOURCE SUPPORT FOR THE IMPROVEMENT OF THE FOOD SAFETY MANAGEMENT SYSTEM IN FOOD SECTORS IN THE BALKAN COUNTRIES

Mira Obradović, Igor Grujić.....57

STATISTICAL REVIEW ON THE NUMBER OF BACTERIAL COLONIES AND SOMATIC CELLS IN FRESH COW'S MILK IN THE DUKAGJIN REGION

Valon Shala, Vesna Antoska Knights59

MYCOTOXIN OCCURRENCE IN CEREALS HARVESTED IN LATVIA

Zane Berzina, Vadims Bartkevics.....61

METROFOOD-MK SERVICES FOR FOOD SAFETY - OPTIMIZATION OF SAMPLE PRETREATMENT FOR NITRATE DETERMINATION

Anita Najdenkoska, Zorica Arsova Sarafinovska, Svetlana Toshevska63

CHANGES IN FISH SAUCE QUALITY THROUGHOUT PRODUCTION

Hiroko Seki65

EFFECT OF HIGH HYDROSTATIC PRESSURE ON THE COLOR OF RAW AND COOKED WILD RED DEER MEAT

Munkhnasan Enkhbold, Attila Lőrincz, Majd Elayan, László Friedrich, Adrienn Tóth.....66

DIETARY EXPOSURE ASSESSMENT OF AFLATOXINS THROUGH THE CONSUMPTION OF DRIED FRUITS IN YEREVAN, ARMENIA

Meline Beglaryan, Davit Pipoyan, Yepraqsya Arshakyan, Viktoria Chirkova.....68

OPTIMISATION OF AN INDIRECT ELISA FOR THE DETECTION OF SOYBEAN ALLERGENS IN PROCESSED FOODS

Catarina Dias, Caterina Villa, Renata Costa, Carlos M.....70

V. RISK ANALYSIS

PATHWAY OF EMERGING FOOD SAFETY RISK COMMUNICATION IN THE EUROPE

Novieta H Sari, Lynn Frewer, Ludger Benighaus, Leonie Dendler-Rafael, Rodney Feliciano, Nicolas Moriceau, Erika Orszagh75

EXPOSURE TO CAFFEINE WITH RISK ASSESSMENT ON THE HEALTH STATUS OF SENSITIVE POPULATION OF ELDERLY PEOPLE OVER 65 YEARS OF AGE

Mara Mustapić, Azra Hođžić, Nihada Ahmetović, Amra Čolić77

VI. FOOD BIOTECHNOLOGY, NOVEL BIO-PRODUCTS, FUNCTIONAL FOODS

ESSENTIAL OIL EXTRACTION FROM LAVANDULA ANGUSTIFOLIA, JUNIPERUS COMMUNIS, AND HELICHRYSUM ITALICUM FROM MALESIA E MADHE AND EVALUATION OF THEIR ANTIMICROBIAL AND ANTIFUNGAL ACTIVITY

Nevila Bushati, Anila Neziri, Marash Rakaj, Eugena Dedushaj81

POTENTIAL CROSS-REACTIVITY OF FOUR EU-REGULATED SPECIES OF EDIBLE INSECTS WITH ALLERGENS OF CRUSTACEAN SPECIES

Carla S. S. Teixeira, Bruno Carriço-Sá, Caterina Villa, Eulália Mendes, Isabel M. P. L. V. O. Ferreira, Isabel Mafra, Joana Costa83

TECHNOLOGICAL ASSESSMENT OF THE POSSIBILITY USING BUCKWHEAT HULLS IN YOGURT PRODUCTION

Joanna Maria Klepacka, Maria Baranowska, Agata Dąbkowska85

VII. EDUCATION, INNOVATION AND KNOWLEDGE TRANSFER

BIOETHICS IN FOOD AND AGRICULTURE, AND IN HEALTH SCIENCES - A SHORT COMPARISON AND POTENTIAL SHARING OF IDEAS AND PRACTICE

Igor Kirovski, Nevena Kirovska89

VIII. NUTRITIONAL PHYSIOLOGY, BIOCHEMISTRY

THE PREVALENCE OF CELIAC DISEASE IN THE POPULATION OF NORTHWEST CROATIA

Željka Kanižaj Rogina, Ivana Herak, Elena Varga, Ivana Dodlek Šarkanj, Natalija Uršulin-Trstenjak93

OPTIMIZING HEALTH THROUGH APPETITE CONTROL: THE ROLE OF THE BMGL AXIS <i>Dženita Salihefendić</i>	95
---	----

UNDERSTANDING THE ROLE OF VITAMIN D IN MOOD AND HAPPINESS <i>Merita Rumano, Brunilda Hasanbelli, Elvisa Rumano</i>	96
--	----

IX. PUBLIC HEALTH, NUTRITION, CHRONIC DISEASES

AWARENESS OF THE GENERAL POPULATION ABOUT GALLSTONES IN THE REPUBLIC OF CROATIA	
--	--

<i>Ivana Herak, Ivana Krajačić, Natalija Uršulin-Trstenjak, Valentina Novak, Melita Sajko, Denis Grgurović</i>	101
--	-----

SMOKING AS A GENERAL HEALTH DANGER PERSONAL “SATISFACTION” OF SMOKERS <i>Trajko Miceski, Silvana Pashovska, Natasha Zdraveska</i>	103
---	-----

RELATIONSHIPS BETWEEN SAND AND WATER QUALITY AT RECREATIONAL BEACHES IN SOUTH ADRIATIC COAST	
---	--

<i>Edjona Bici, Spase Shumka, Anilda Kokali, Aida Demo</i>	105
--	-----

DIETARY HABITS OF PERSONS WITH AND WITHOUT CARDIOVASCULAR DISEASES BEFORE THE PANDEMIC WITH THE COVID (SARS-COV 2 VIRUS)	
---	--

<i>Valentina Pavlova, Sasho Drvoshanski, Tatjana Blazhevaska, Martina Pavlovska Dimkovski, Aksu Samet</i>	107
---	-----

BOVINE MILK CASEIN AS THE SOURCE OF METABOLIC SYNDROME-PREVENTIVE PEPTIDES - IN SILICO ANALYSIS	
--	--

<i>Anna Iwaniak, Małgorzata Darewicz, Damir Mogut, Piotr Minkiewicz, Justyna Żulewska</i>	109
---	-----

BIOACTIVE PEPTIDES WITH ANTIDIABETIC, ANTIHYPERTENSIVE, AND ANTIOXIDATIVE ACTIVITIES FROM OAT GLOBULINS RELEASED VIA INFOGEST METHOD	
---	--

<i>Małgorzata Darewicz, Monika Pliszka, Borawska-Dziadkiewicz, Piotr Minkiewicz, Anna Iwaniak</i>	111
---	-----

HUMAN LISTERIOSIS COMEBACK ODE <i>Biljana Curcic-Trajkovska, Dzengis Jashar, Kornelija Trajkova</i>	113
---	-----

TIPS AND TRICKS TO PROTECT PREGNANCY FROM LISTERIA <i>Kornelija Trajkova, Biljana Curcic, Dzengis Jashar, Katerina Kubelka Sabit, Rebeka Gorgievska</i>	115
---	-----

X. FOOD LABELING AND NUTRITION AND HEALTH CLAIMS

FOOD SUPPLEMENTS REGULATION ON HEALTH CLAIMS LABELLING IN NON-EU COUNTRIES <i>Marjan Dzeperoski</i>	119
---	-----

XI. DIETARY (THERAPEUTICALLY) NUTRITION AND DIET SUPPLEMENTS

CHRONO-NUTRITION: HARNESSING TIME-RESTRICTED EATING FOR HEALTH OPTIMIZATION <i>Dzengis Jasar, Katerina-Kubelka - Sabit, Vanja Filipovski, Elena Stojkoska, Biljana Curcic, Kornelija Trajkovska, Blagica Krsteska</i>	123
---	-----

XII. FOOD CHAIN MANAGEMENT, MARKETING, ECONOMICS

THEORY OF MIND IN CHILDREN AGED 3-5 YEARS – RELEVANCE, CORRELATION WITH BRAND SYMBOLISM AND FOOD-RELATED DEVELOPMENT

Konstantin Kakurinov, Snezhana Ristevska Jovanovska..... 127

A COMPREHENSIVE OVERVIEW OF CANNABIS NUTRIENT COMPOUNDS: ALTERNATIVES AND CHALLENGES

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Abstract

Cannabis is not a typical and famous food additive, but in recent years the increasing availability of legal-market cannabis products has raised many questions about the potential benefits or challenges regarding the use of hemp seeds and hemp-derived products. "Hemp" refers to low Δ^9 -tetrahydrocannabinol (Δ^9 -THC) cultivars of *Cannabis sativa* L., while the term "marijuana" is used for cultivars with high levels of Δ^9 -THC, the primary psychoactive cannabinoid found in the plant. Although hemp and marijuana belong to the same genus and species, they differ in terms of chemical and genetic composition, production practices, product uses, and regulatory status. This research aimed to make a comprehensive overview of cannabis nutrient composition, alternatives, and challenges since it has the potential to provide significant benefits by promoting overall health and well-being, but also aspects related to food security that should not be neglected since they are essential for the safe supply of cannabis-based products on the market.

Scientific data on the beneficial effects of non-psychoactive cannabinoids on the human body have increased interest in foods containing hemp components. A diversity of commercial food products can be made from cannabis and hemp extracts, using distillates and isolates, obtained by different manufacturing processes. For this purpose, we consulted more than 20 original scientific studies, as well as a literature review (for a period of the last five years), through different scientific databases (PubMed, SCOPUS, and ResearchGate), on hemp seed chemical composition. These studies have demonstrated its macro and micronutrient composition. The hemp seed contains around 25% of the proteins and it provides all nine essential amino acids, making a complete protein source.

The two main proteins in hemp seed are edestin and albumin, both high-quality and easily digested proteins. In addition, hemp seed has exceptionally high levels of arginine. Hemp seeds contain over 30% oil rich in omega-3 and omega-6 fatty acids, among which are two essential fatty acids, linoleic acid (18:2 omega-6) and α -linolenic acid (18:3 omega-3). The omega-6 to omega-3 ratio in hemp seed oil is normally between 2 : 1 and 3 : 1, which is optimal for cardiovascular health, brain function, and inflammation regulation. Considerable amounts of dietary fibers, vitamins (especially vitamin E), and minerals (Mg, P, K, Fe, and Zn) are also present in hemp seed. Controversially, cannabis is often thought of for its psychoactive properties owed to its content of a variety of phytochemicals, including terpenes (cannabinoids) and flavonoids, which can provide significant health benefits with acceptable side effects, so the production technologies for hemp seed and derivatives should be selected with caution.

The advantages of incorporating hemp seeds and hemp-derived products that add to a balanced and nutritious diet by providing valuable nutrients and health benefits outweigh the potential disadvantages for most individuals. The legal status and regulations surrounding hemp and hemp-derived products vary by region. So, the regions where industrial hemp is legalized as an agricultural commodity and hemp seed is included in foods are promoting the expansion of the hemp food industry. It's important to ensure these products are provided from reputable sources and comply with local laws and regulations. However, it's essential to note that individual dietary needs can vary and it's advisable to consult a healthcare professional or registered dietitian for personalized guidance to utilize the benefits of hemp seed products.

Key words: *Cannabis, Diet, Health benefit, Hemp seed, Nutrient.*