

**NANOELECTROSPRAY HIGH CAPACITY ION TRAP MULTIPLE STAGE
MASS SPECTROMETRY FOR THE STRUCTURAL ANALYSIS OF HUMAN
BRAIN GANGLIOSIDES**

**SPECTROMETRIE DE MASA MULTIPLA CU
NANOELECTROPULVERIZARE SI CAPCANA IONICA DE MARE
CAPACITATE PENTRU ANALIZA STRUCTURALA A GANGLIOZIDELOR
DIN CREIERUL UMAN**

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Abbreviations

Gangliosides and their precursor glycosphingolipids are abbreviated according to the system of L. Svennerholm (J. Neurochem. 1963; 10: 613 and Adv. Exp. Med. Biol. 1980; 125: 11) and the recommendations of the IUPAC-IUB Commission on Biochemical Nomenclature (Eur. J. Biochem. 1977; 79: 11 and Eur. J. Biochem. 1998; 257: 293) as follows: LacCer, Gal4Glc1Cer; Gg4Cer, Gal3GalN-Ac4Gal4Glc1Cer; nLc4Cer, Gal4GlcNAc3-Gal4Glc1Cer; GM1a or GM1, II3--Neu5Ac-Gg4Cer; GM1b, IV3--Neu5Ac-Gg4Cer; GD1a, IV3--Neu5Ac,II3--Neu5Ac-Gg4 Cer; GD1b, II3--(Neu5Ac)2-Gg4Cer; GD1c, IV3--(Neu5Ac)2- Gg4Cer; GT1b, IV3--Neu5Ac,II3--(Neu5Ac)2-Gg4Cer; GT1c, II3--(Neu5Ac)3-Gg4Cer; 3-nLM1, IV3--Neu5Ac-nLc4Cer; nLD1, disialo-nLc4Cer.

Abstract

A novel protocol based on electrospray ionization (ESI) multiple stage high capacity ion trap (HCT) mass spectrometry (MS) was developed for glycosphingolipidomic surveys. The method was optimized for detailed structural elucidation of human brain gangliosides and particularly applied to human hippocampus-associated structures. The multiple stage MS experiments allowed for a complete structural characterization of GM1 ganglioside species, which was achieved by elucidation of the oligosaccharide sequence, identification of the GM1a structural isomer from the data upon sialic acid localization along the sugar backbone and determination of the d18:1/18:0 of fatty acid/sphingoid base composition of the ceramide moiety. The methodology developed here is of general practical applicability for glycolipids and

represents a step forward in the implementation of the advanced and most modern MS methods in glycomics.

ABOUT THE STRUCTURE OF COBALT AND TITANIUM MIXED OXIDES

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Abstract

On the basis of the X- ray diffraction pattern, the formation of cobalt and titanium mixed oxides by thermolysis of mixed complexes is provide. Inside the limits of the investigated oxidic compounds, only an ilmenite type structure was found.

CROSS-LINKING OF PROTEINS IN FOOD

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Abstract

Protein-protein cross-links play a significant role in determining the functional properties of food proteins. Cross-linking of proteins offers many possibilities to tailor the functional properties of foods, without damaging their nutritional quality. This review discusses the different agents and methods that might be used for cross-linking of proteins and examines current and future applications of this chemistry in food processing.

THERMAL BEHAVIOR UNDER NON-ISOTHERMAL CONDITIONS OF SOME WEAK ACID CATIONITES IN BI-IONIC FORM ($H^+ \dots Na^+$)

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Abstract

In this paper we present some data regarding the thermal behavior under non-isothermal conditions of weak acid cationites series of Purolite type which were partially neutralized with Na^+ . The investigated ($H^+ \dots Na^+$) cationites are acrylic resins cross-linked with divinyl-benzene (DVB). The experiments were followed up to $600^{\circ}C$, in air atmosphere, on granulated or grinded samples, in mono-ionic H^+ or bi-ionic $H^+ \dots Na^+$ form.

USAGE AND APPLICABILITY FIELDS OF ASCORBIC ACID IN FOOD INDUSTRY

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Abstract

Vitamin C from natural sources is much more active than that synthesized, one of the possible explanations is that in nature it is found along with vitamin P and other compounds with antioxidant properties that protect it.

The ascorbic acid is a protective factor, on one hand maintaining the quality of foods and on the other hand being a product that characterizes the new spirit of medicine, which is to prevent rather than cure.

**APPLICATION OF CSI-DIFF-MS SOFTWARE FOR IDENTIFICATION OF
THE BEST QUANTUM CHEMICAL METHOD FOR 3- AND 4-
NITROBENZOPHENONE DIMETHYLACETAL MOLECULES AND
FRAGMENTATION IONS**

**APLICAREA PROGRAMULUI CSI-DIFF-MS LA STABILIREA METODEI
CUANTOCHIMICE OPTIME PENTRU MOLECULELE SI IONII DE
FRAGMENTARE AI DIMETILACETALILOR 3- SI 4-NITROBENZOFENONEI**

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Abstract

In this work a new method to rapidly check the quantum chemical calculations methodologies is presented. This method is using the obtained mass spectrometry fragmentation experimental data. For this purpose were used the formation heat obtained from semi-empirical calculation methods such as AM1, MINDO3, MNDO, PM3, for the molecules and the ions resulted by fragmentation of 3- and 4- nitrobenzophenone dimethyl acetals, and also from the mass spectra of these two compounds and from the CSI-Diff-ms 2.1.2 software employed to differentiate between the mass spectra and to correlate the calculated thermodynamic data.

ORGANOCHLORINE PESTICIDES IN FOOD OF ANIMAL ORIGIN FROM IASSY COUNTY, ROMANIA

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Abstract

The levels and distribution of organochlorine pesticides (OCPs), such as hexachlorocyclohexane (HCH) isomers and DDT analogues, were investigated in food samples of animal origin (dairy products, eggs, fish, meat and meat products) collected from Iassy county, Romania. All samples (except fish) showed a relatively low degree of contamination with OCPs, well below the official Romanian norms. While HCHs presented higher concentrations in dairy products (up to 90 ng/g lipid weight), DDT and analogues were found in higher concentrations in eggs, meat and meat products (up to 460 ng/g lipid weight). The highest concentrations of DDTs (760 ng/g lipid weight) were found in a fish sample from the Bahlui river.

PSYCHOSENSORIAL ANALYSIS OF FLAVOUR OF THE COMPOUNDS GENERATED BY MAILLARD SYSTEMS IN MILD CONDITIONS

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Abstract

Much research is devoted to the elucidation of mechanisms in the Maillard reaction. Model studies with reactive carbonyl compounds and amino acids have contributed significantly to our understanding on the psychosensorial and flavour levels developed in the Maillard reaction. It is concluded that some molecules appearing during the Maillard reaction form appetizing aromas¹.

DEVELOPMENT OF LEAKAGE CONTROLLED FLOW DIVERSION SAFETY VALVES

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Abstract

The strict instructions for heat-treating of raw milk are contained in Codex Alimentarius Hungaricus, 92/46, 92/380 EU Directives and 1/2003 (I.08) FVM-ESzCsM decree. Most of the applied equipments for heat-treating of raw milk have no flow direction valve, which should guarantee the heat-treating of milk by directives in all cases.

The goal of the project: to develop a safety flow-diversion valve for small and medium dairy firms in order these firms will be able to satisfy the EU directions, in this way, their products can take part in the Eu dairy market as well

Developed flow-diversion valve fitted small pipe diameter has double valve seat and leakage system.

The main advantage of developed valve is the follows: the raw milk or failure heat-treated milk doesn't able to flow into the regenerative sections of equipment in the case of the failure of gaskets, even more it shows the gasket failure with leakage.

Using equipments with developed valve cancel a main critical point from the Quality Management System. Innovated valve is quickly installable with standard binder items.

The flow-diversion safety valve, which was developed by Zootechnika Ltd. and University of Szeged, sponsored by EU and Hungarian National Program GVOP 3.1.1-2004-05-0275/3.0. has a Qualification from Bundesanstalt für Milchforschung Institution Kiel n:KI-S 5/04.

WHAT DO WE KNOW ABOUT THE CHEMICAL SYSTEMS REDUCING DINITROGEN IN PROTIC MEDIA ?

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Abstract

Examination of the possibilities of catalytic dinitrogen reduction in protic media shows that an optimum catalyst should be able to form a binuclear complex M₂NNM bound to a polynuclear cluster of reductant atoms capable of transferring electrons to the coordinated N₂ molecule. Chemical systems found so far which actively reduce N₂ in protic media to hydrazine and/or ammonia are also polynuclear and contain d² or d³ transition metals.

**BONDING POSSIBILITIES FOR DINITROGEN ACTIVATION
IN THE FeMo COFACTOR IN NITROGENASE AND IN THE MODELS**

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Abstract

Quantic chemistry calculations concerning dinitrogen activation by the FeMo cofactor in nitrogenase and the laboratory experiments on its chemical models suggest that the best bonding mode of dinitrogen is the N₂ molecule insertion through an end wherein one nitrogen atom is bound at the active centre of the FeMo cofactor and the other ones goes through the Fe₄ surface of the Fe₆ prism of FeMo cofactor or of its chemical models based on Fe (II). This bonding mode permits the elaboration of a possible way of dinitrogen protoning.

COBALT AND TITANIUM MIXED OXIDES IR SPECTRA

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Abstract

After the thermogravimetric and thermodifferential analysis, other thermal decomposition were performed on different samples of mixed complexes of cobalt (III) ammine titanyl-oxalate, at such temperatures for which the thermal effects were observed on their thermoanalytical curves. The samples were maintained at these temperature for half an hour and then cooled down rapidly at room temperature.

The infrared absorption spectra of mixed complexes of the cobalt (III) ammine titanyl-oxalate type were investigated

COMPARASION BETWEEN VISUAL EVOLUTION OF PAPRIKA GRIST AND ITS COLOUR CHARACTERISTICS

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Abstract

The colour characteristics of paprika grists were analysed. The CIE L*, a*, b* system was used for colour characterization, measured with a Minolta CR-300 instrument. The correlation between the by instrumentally determined colour difference and that estimated visually estimate was investigated. The assumptions for the classification of paprika grists into the colour classes were discussed: the colour difference calculated from the colour coordinates of two paprika grists cannot be visually distinguished if $\Delta E^*_{ab} \leq 1.5$ or $\Delta E^*_{ab} \leq 2.5$ and $(|\Delta L^*|, |\Delta a^*|, |\Delta b^*|) < 1.5$, the difference can hardly be distinguished visually if $1.5 < \Delta E^*_{ab} \leq 2.5$.

**FRUCTOSE, A VALUABLE NATURAL SWEETENER FOR THE CONSUMER
OF THE XXI CENTURY**

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STĂNESCU Michaela-Dina

Abstract

This paper presents the newest tendencies to obtain fructose (a valuable sweetener for diabetics and obese peoples) from sucrose.

PEACH RESISTANCE TO DISEASES EVALUATION TO OBTAIN QUALITY RAW MATERIAL IN THE CANNES INDUSTRY

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ABSTRACT

Creating and using resistant varieties in plant cultures is one of the most effective ways to reduce the number of treatments and to decrease pollution. The new peach cultivars (Triumf, Congres, Victoria, Alexia, Antonia, Dida, Eugen) or nectarine cultivars (Mihaela, Tina) obtained at SCDP Baneasa with increased resistance against diseases are not inferior as to quality or production potential to classic cultivars; further more, they have the advantage of a simplified technology leading to a significantly lower cost due to the reduced number of chemical treatments.

USE OF TWO REDOX ENZYMES FOR AZO DYES DECOLORIZATION

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Abstract

In this paper are presented the results obtained on azo dyes decolourization, using two different enzymes, a laccase and a peroxidase. The ability of *Trametes villosa* laccase to degrade an azo dye (Methyl orange) and of a novel peroxidase to decolourize Orange IV was studied in terms of Michaelis-Menten constants.

The enzymes modified electrodes were used for determination of the donor substrates in RDE mode, and the results were interpreted in terms of catalytic efficiencies.

In the case of laccase, from comparative studies of the mediated and mediatorless currents of azo dye degradation reactions it was concluded that the addition of 1-hydroxybenzotriazole (HBT) as mediator considerably improves the catalytic efficiency.

In the case of Orange IV decolourization by versatile peroxidase, a value of 24.6 μM for K_m^{app} was obtained, while the catalytic efficiency ($I_{\text{max}}/K_m^{\text{app}}$) was found to be 0.14 $\text{A/M}^{-1}\text{cm}^{-2}$.

SOME WORDS ABOUT THE CATALYTIC REDUCTION OF DINITROGEN

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Abstract

The proposed mechanism of dinitrogen reduction in a binuclear $M-N=N-M$ complex bound to a polynuclear reducing agent makes it natural to use the catalytic complex for the electrochemical reduction of dinitrogen at the surface of the cathode

DES RECHERCHES CONCERNANT LE RÔLE DES PRODUITS LAITIERS-ACIDES PROBIOTIQUES, DANS L'INHIBITION DU DÉVELOPPEMENT DE CERTAINS MICROORGANISMES DE CONTAMINATION

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Sommaire

The purpose of our research is to find out the influence the probiotic lactoacid products have in inhibiting the development of some contaminating microorganisms. In this respect there were grown on some Petri dishes the following microorganisms: Escherichia coli, Proteus vulgaris and Bacillus subtilis, in an environment of nutritive agar; after that the probiotic lactic culture was inoculated by means of some sterile microcomprimats (Activia – Danone, Actimel – Danone, Napolife – Napolact, Extra-cream yogurt - Napolact). After impregnating the lactic culture, the Petri dishes were kept under the same temperature, 37°C for 24 hours. At the end of this period, there were noticed the development of a area on the microcomprimats, which means that the contaminating microorganisms stopped growing in that area.

BIODEGRADABLE PACKAGING MATERIALS FOR FOOD PRODUCTS

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Abstract

The importance of research for finding renewable resources (as both fuel and raw materials) for our many petroleum-based products, particularly for food packaging materials is nowadays emphasized by the economic impact of petroleum resources depletion and by the concerns about the environmental protection. Headway is being made with a polymer called polylactic acid (PLA), an affordable, recyclable, innovative packaging material made from renewable resources. This paper-work intent is to analyze this new material under various aspects, in order to evaluate its possible impact on food packaging industry and environmental protection. There are taken into account PLA properties in comparison with other petroleum-based plastics, the suitability to applications in food packaging sphere, the lack of toxicity (classification as GRAS), the versatility (generating a large scale of products varying by molecular weight and crystallinity), and also the rapid rising of market share for natural, biodegradable and renewable resources derived products.

THE INFLUENCE OF SOME MACROELEMENTS ON THE LACTIC FERMENTATION DURING THE MANUFACTURING OF YOGURT

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Abstract

The effectiveness of the enzyme lactase (β -D-galactosidase) in the obtaining of the yoghurt from raw cow milk in the presence of some macroelements (Na^+ , K^+ and Ca^+) was studied. Hydrolysis of the lactose was indicated by the decreasing of milk pH at different temperatures (35°C - 47°C) and by the relative activity of the lactase. The experimental data suggest that the bivalent cation (Ca^{2+}) in a range of 0.5-2 mM activate the enzyme activity. As the temperature increase the enzyme became more active, i.e. at 47°C the casein protein precipitated at 120min. Instead Na^+ and K^+ addition decreased the β -D-galactosidase activity at all temperature and at 47°C the sodium chloride addition inhibit completely the enzyme activity, the pH-value being greater than 5.0 even after 300 minutes.

ENZYMATIC BIODEGRADATION OF THE COLOURED SUBSTANCES FROM WASTES

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Abstract

The dyes used in food industry may generate problems for the obtained waste waters. A number of solutions for the elimination of dyes from waste waters are presented emphasizing the biological ones due to ecological aspects.