

## THE OPTIMAL CONDITIONS FOR ANTHOCYANIN EXTRACTION AND EVALUATION OF ANTIOXIDANT CAPACITY

Florentina Damşa<sup>1,2</sup>, Alexandru Woinaroschy<sup>1</sup>, Carmen Liliana Bădărău<sup>3</sup>

<sup>1</sup>Politehnica University of Bucharest

<sup>2</sup>National Institute of Research and Development for Potato and Sugar Beet Brasov

<sup>3</sup>Faculty of Food and Tourism, Transilvania University, Brasov

### Abstract

**Objective:** Varieties of pigmented potato (*Solanum tuberosum* L.) are an important source of anthocyanins. Anthocyanins belong to a widely spread group of substances, present in plant tissues, called flavonoids. The aim of this work is to establish the optimal conditions for blue potato anthocyanins extraction, and to evaluate the antioxidant activity of the extract.

**Methods:** The anthocyanins were extracted from blue potato Salad Blue variety using the soaking in ethanol (1% acidified). Antioxidant activity was measured by using the DPPH and the ABTS methods.

**Conclusion:** The effect of shaking, the shredding level of samples, and the influence of the ethanol ratio on anthocyanins extraction have been studied. The advanced shredding of samples has a positive influence on anthocyanin extraction, while sample mixing have a positive influence on the anthocyanins extraction yield.

### References:

[1] CRISTINA MOȚA, ANA ROȘU, GH. CÂMPEANU, 2004, "Compuși bioactivi de origine vegetală. Abordări biotehnologice", Editura Universității din București, ISBN 973-558-029-2, pag. 99-126.

[2.] Chang Ling Zhao, Hua Chun Guo, Zhi Yuan Dong and Qing Zhao, 2009, „Pharmacological and nutritional activities of potato anthocyanins”, African Journal of Pharmacy and Pharmacology Vol. 2(10), ISSN 1996-0816, pag. 463-468.

[3] Simona Luciola, 2012, "Anthocyanins: Mechanism of action and therapeutic efficacy", Medicinal Plants as Antioxidant Agents: Understanding Their Mechanism of Action and Therapeutic Efficacy, ISBN 978-81-308-0509-2, pag. 27-57.



Romanian Society of Chemistry

SICR

Societatea de Inginerie Chimică  
din România

ANCS

Agenția Națională pentru Cercetarea Științifică

CiROM

Patronatul din Industria Cimentului și  
altor Produse Minerale pentru  
Construcții din România



S.C.OMV Petrom S.A.

RONEXPRIM  
WE DELIVER PERFORMANCE

S.C. Ronexprim S.R.L.

CARPATCEMENT  
HEIDELBERGCEMENT Group

Carpatcement Holding



PANalytical

PANalytical Romania



Redox Research & Analytic S.R.L.



S.C. DEXTER COM S.R.L.

www.dacchim.ro  
aparatura si consumabile pentru laborator

DACCHIM S.R.L.

Metrohm  
Romania

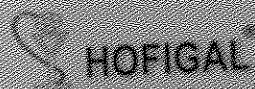
Metrohm Analytics Romania S.R.L.

analytikjena

Analytic Jena Romania S.R.L.



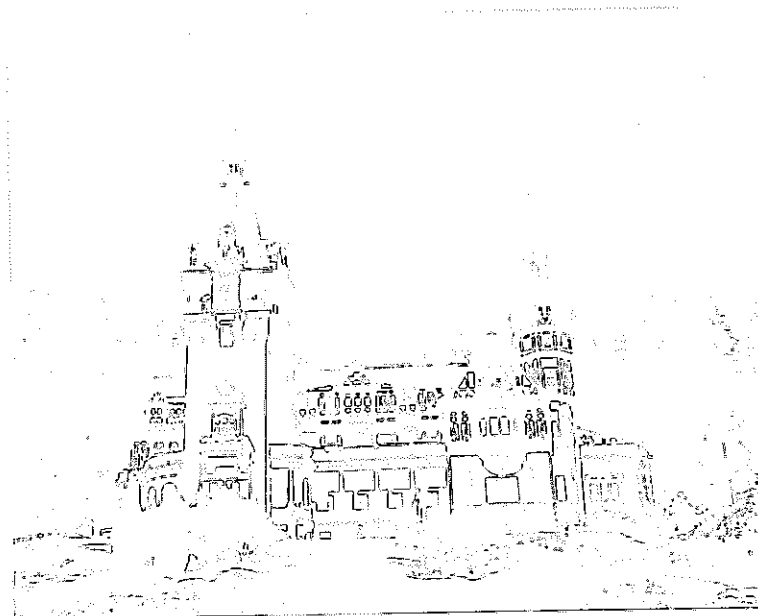
Agilrom Scientific S.R.L.



S.C. Hofigal Export Import S.A.

ISSN: 2344-1895  
ISSN: L 2247-5389

# 18<sup>th</sup> Romanian International Conference on Chemistry and Chemical Engineering



# RICCCE18

## PAPERS and ABSTRACTS

September 4 – 7, 2013  
Sinaia, Romania  
[www.riccce18.upb.ro](http://www.riccce18.upb.ro)

# 18<sup>th</sup> Romanian International Conference on Chemistry and Chemical Engineering



## RICCCE18

# PAPERS and ABSTRACTS

September 4 – 7, 2013  
Sinaia, Romania  
[www.ricce18.upb.ro](http://www.ricce18.upb.ro)

## Table of Contents

<b>IMPROVING DIGESTER PERFORMANCE BY ANAEROBIC CO-DIGESTION: PROCESS AND MODELING ASPECTS</b>	S4-7
J. Mata-Alvarez, J. Dosta, S. Astals, M. Peces, X. Fonoll, M. Romero	
<b>SEPARATION BY PERTRACTION - THE CHALLENGE FOR DOWNSTREAM PROCESSES IN BIOTECHNOLOGY</b>	S4-11
D. Caşcaval, A.I. Galaction	
<b>A COMPARTMENTED KINETIC MODEL USED TO CHARACTERIZE AND <i>IN-SILICA</i> DESIGN CONTROLLED DRUG RELEASE SYSTEMS</b>	S4-12
I. Luţă, G. Maria, D. Berger, S. Năstase, A.I. Stoica, D. Stirbet, G.L. Radu	
<b>MODELING AND DESIGN OF CATALYTIC CYCLIC DISTILLATION</b>	S4-15
C. Pătruţ, C.S. Bildea, A.A. Kiss	
<b>AN ANALYSIS OF UNSTEADY STATE AUTOTHERMAL CATALYTIC FIXED BED REACTORS</b>	S4-18
I. Stoica, I. Banu, G. Bozga	
<b>BIODIESEL SYNTHESIS ON SOLID CATALYSTS</b>	S4-19
A. Tuluc, V. Pleşu, J. Bonet-Ruiz, G. Bumbac, P. Iancu, G. Bozga	
<b><i>IN-SILICO</i> MODELING AND METABOLIC ENGINEERING OF <i>ESCHERICHIA COLI</i> TO SUCCINIC ACID PRODUCTION</b>	S4-20
Z. Bodor, A. (Iuhasz) Fazakas, E. Kovács, S. Lányi, B. Ábrahám	
<b>MASS TRANSFER AND MATHEMATICAL MODELLING IN MOLECULARLY IMPRINTED POLYMERS WITH SCLAREOL</b>	S4-21
S.O. Dima, T. Dobre, O. Chetranu, A. Sârbu	
<b>KINETIC MODELLING AND OPTIMISATION OF COPPER LEACHING PROCESS FROM WASTE ELECTRICAL AND ELECTRONIC EQUIPMENTS</b>	S4-22
I.A. Popescu, A. Egedy, S. Fogarasi, T. Varga, P. Ilea	
<b>CONTROL OF THERMAL WAVE TRAINS OF THE LOOP REACTOR</b>	S4-23
P. Altimari, E. Mancusi	
<b>CONTROLLED RELEASE OF RIFAMPICIN AND ISONIAZID FROM ORAL DOSAGE FORMS</b>	S4-24
P. Postelnicescu, A.M. Dumitrescu, A.M. Josceanu, E. Dragomir	

<b>URANIUM (VI) ADSORPTION EQUILIBRIUM ON PUROLITE RESIN SGA 600 U/3472</b>	S4-28
A. Botez, T. Dobre, E. Panțuru, A. Filcenco-Olteanu <sup>2</sup>	
<b>SIMULATIONS OF C5/C6 ISOMERIZATION PROCESS WITH A NEW KINETIC MODEL</b>	S4-33
C.I. Konecsag, A.E. Sterpu, A.I. Dumitru	
<b>MASS TRANSFER COEFFICIENTS IN DISSOLUTION PROCESSES USING THE ROTATING DISC TECHNIQUE</b>	S4-38
C.A. Horoba, I. Mămăligă	
<b>IMPROVING DISTILLATION PERFORMANCE BY CYCLIC OPERATION</b>	S4-41
I. Liță, C.S. Bildea, A.A. Kiss	
<b>INFLUENCE OF METAL POISONING ON THE PERFORMANCE OF FCC CATALYSTS</b>	S4-44
A.I. Dumitru, C.I. Konecsag, A.E. Sterpu	
<b>CONTROLLED RELEASE OF AMOXICILLIN FROM BACTERIAL CELLULOSE MEMBRANES</b>	S4-45
R.D. Păvăloiu, A. Stoica, M. Stroescu, T. Dobre	
<b>USE OF FIXED BED PERCOLATION AT OIL SEPARATION FROM GRINDED RAPESEED</b>	S4-46
M. Avram, G. Răceanu, M. Stroescu, A. Stoica, T. Dobre, O. Floarea	
<b>PREDICTION OF REGULATED AND NON-REGULATED DISINFECTION BY-PRODUCTS FORMATION IN WATER</b>	S4-47
Y. Kadmi, L. Favier, E. Matei, C. Predescu, D. Wolbert	
<b>SIZE-DEPENDENT EFFECTIVE PHYSICAL PROPERTIES OF SUSPENSION AND THE THERMAL BEHAVIOUR OF THE DISCONTINUOUS POLYMERIZATION REACTOR</b>	S4-48
G.R. Palău, V. Lavric	
<b>DIRECT EXTRACTION OF PROPIONIC ACID FROM <i>P. ACIDIPROPIONICI</i> CELLS SUSPENSIONS</b>	S4-49
A. Carlescu, A.C. Blaga, D. Cașcaval, A.I. Galaction	
<b>SELECTIVE PERTRACTION OF SUCCINIC ACID FROM MIXED ACIDS FERMENTATION BROTHS</b>	S4-50
M. Postaru, L. Kloetzer, A.I. Galaction, D. Cașcaval	

<b>IMPROVEMENT OF OXYGEN TRANSFER IN BACTERIAL AND YEASTS CULTURES USING OXYGEN-VECTORS</b>	S4-51
R.M. Matran, M. Filibiu, A.C. Blaga, A.I. Galaction, D. Cașcaval	
<b>CULTURAL CONDITIONS OPTIMIZATION OF THE ANAEROBIC DIGESTION OF CORN ETHANOL DISTILLERY RESIDUALS USING RESPONSE SURFACE METHODOLOGY</b>	S4-52
L. Gyenge, B. Ráduly, S. Crognale, S. Lányi, B. Ábrahám	
<b>DEFINING THE ROLE OF CYSTEINE-CONTAINING C-TERMINAL REGION OF ENHANCED GREEN FLUORESCENT PROTEIN IN FLUORESCENCE QUENCHING</b>	S4-53
J. Petres, E.É. Bálint, L. Szilágyi, S. Lányi, B. Ábrahám	
<b>ADVANCED OXIDATION OF DYE MIXTURE, SURFACTANTS AND POLYALCOHOLS IN THE PROCESS OF TEXTILE WASTEWATER TREATMENT</b>	S4-54
M. Gonța, V. Matveevici, G. Duca, L. Mocanu, V. Iambartev	
<b>NEW SMART CHITOSAN HYDROGELS DESIGNED FOR SOFT TISSUE ENGINEERING</b>	S4-55
D. Dimonie, M. Petrache, R. Gabor, I. Trandafir, M. Dimonie, E. Vasile, S. Dinescu	
<b>POLYMER MEMBRANES-BASED ENZYMATIC COMPOSITES: SYNTHESIS AND CHARACTERIZATION</b>	S4-56
T. Sandu, A. Sârbu, C.M. Damian, A.M. Florea, S. Vulpe, H. Iovu	
<b>STUDY OF DYNAMIC PARAMETERS IN A MULTI-LAYER FLUIDIZED BED STABILIZED IN A COAXIAL MAGNETIC FIELD</b>	S4-57
G. Muntianu, G. Djelveh, D.I. Nistor, A.V. Ursu, N. Platon, G. Isopencu, A.M. Mareș, G. Jinescu	
<b>GOLD RECOVERY FROM THE SECONDARY STREAMS RESULTED IN THE RECYCLING PROCESS OF WASTE PRINTED CIRCUIT BOARDS</b>	S4-58
S. Fogarasi, F. Imre-Lucaci, A. Imre-Lucaci, T. Chová, P. Ilea	
<b>ANTIMICROBIAL BACTERIAL CELLULOSE COMPOSITES</b>	S4-59
M. Stroescu, A. Stoica, T. Dobre, R. Ceclan, G. Isopencu	
<b>BACTERIAL CELLULOSE COMPOSITES USED AS SUPERABSORBENT MATERIALS FOR ARID AREAS</b>	S4-60
A. Stoica, M. Stroescu, T. Dobre, O. Pârvulescu	
<b>HYBRID SYSTEMS FOR LIGHT HYDROCARBONS MIXTURE SEPARATION</b>	S4-61
R. Isopescu, L. Gîjiu, D. Dinculescu	

- RADIOACTIVE SOILS DECONTAMINATION BY WASHING METHOD** S4-62  
A.D. Radu, A. Woinaroschy, E. Panțuru, A. Filcenco-Olteanu
- THE OPTIMAL CONDITIONS FOR ANTHOCYANIN EXTRACTION AND EVALUATION OF ANTIOXIDANT CAPACITY** S4-63  
F. Damsa, A. Woinaroschy, C.L. Bădărău
- THE SLOPE ANGLE DETERMINATION AS MEASURE OF INTERPARTICULAR FORCES FOR POWDERY MATERIALS** S4-64  
G. Isopencu, M. Mareș, G. Jinescu
- PRODUCTION OF  $\gamma$ -BUTYROLACTONE BY HYDROGENATION OF MALEIC ANHYDRIDE AND DEHYDROGENATION OF 1, 4-BUTANEDIOL** S4-65  
A. Javaid, C.S. Bildea
- STUDIES OF VOCs ADSORPTION ONTO ACTIVATED CARBON IN A FIXED BED** S4-66  
O.C. Pârvulescu, L. Ceatră, M. Stroescu, A. Stoica, T. Dobre, G. Iavorschi
- PROCESSES INVOLVING A HIGH BIOCOMPATIBILITY OF CELLULOSE ACETATE PHTHALATE/HYDROXYPROPYL CELLULOSE FILMS** S4-67  
M.D. Onofrei, A.M. Dobos, N. Olaru, L. Olaru, S. Ioan
- STRUCTURE / ANTITHROMBOGENIC PROPERTIES RELATIONSHIP OF NEW PHOSPHORUS-MODIFIED POLYSULFONES** S4-68  
L.I. Buruiană, E. Avram, O. Petreus, A. Popa, S. Ioan