

# **12º Encontro de Química dos Alimentos**

**Composição Química, Estrutura e Funcionalidade:  
A Ponte Entre Alimentos Novos e Tradicionais**

## **12<sup>th</sup> Meeting on Food Chemistry**

**Bridging Traditional and Novel Foods:  
Composition, Structure and Functionality**

### **Abstracts**

**Sociedade Portuguesa de Química  
Divisão de Química Alimentar**

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# Table of Contents

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<b>PREFÁCIO.....</b>	<b>III</b>
<b>TABLE OF CONTENTS.....</b>	<b>V</b>
<b>COMMITTEES.....</b>	<b>XV</b>
<b>ORGANIZING COMMITTEE.....</b>	<b>XV</b>
<b>SCIENTIFIC COMMITTEE.....</b>	<b>XV</b>
<b>COMMITTEE OF HONOUR.....</b>	<b>XV</b>
<b>USEFULL INFORMATIONS.....</b>	<b>XVI</b>
<b>PROGRAM.....</b>	<b>XXI</b>
<b>PLENARY LECTURES.....</b>	<b>1</b>
PROMOTING FOOD WASTES REDUCTION BY DEVELOPING INNOVATIVE TAILOR-MADEFOOD PACKAGING FROM BIO- MOLECULES ISSUED FOOD INDUSTRY BY-PRODUCTS.....	4
(PLENARY SESSION 2).....	5
MICROSCOPY TECHNIQUES TO INVESTIGATE FOOD STRUCTURE.....	6
<b>KEYNOTE LECTURES.....</b>	<b>7</b>
IMPACT OF PROCESSING ON BIOACTIVITY OF FRUITS AND VEGETABLES.....	9
CAN HIGH PRESSURE CREATE NOVEL FOODS WITH NEW SENSORIAL AND FUNCTIONAL PROPERTIES, APART FROM BEING A FOOD PRESERVATION TECHNOLOGY?.....	10
FOOD AUTHENTICATION: NEW INSIGHTS ON DNA-BASED METHODS.....	11
KNOWLEDGE AND TECHNOLOGY TRANSFER NETWORKS IN THE AGROFOOD SECTOR.....	12
A IMPORTÂNCIA DA MARCA - PORTUGALFOODS.....	13
FOOD COMPANIES AND RESEARCH INSTITUTIONS - CULTURAL BRIDGES.....	14
NUTRITIONAL NEEDS AND EARLY STAGES IN THE DEVELOPMENT OF HEALTHY EATING HABITS.....	15
ROOM AT THE TOP AS WELL AS AT THE BOTTOM: STRUCTURE OF FUNCTIONAL INCLUSION COMPOUNDS.....	16
BIOPOLYMERS AND CREATION OF STRUCTURE.....	17
<b>SESSION 1 - STABILIZATION, PROTECTION AND DELIVERY OF BIOACTIVES.....</b>	<b>19</b>
<b>ORAL PRESENTATIONS.....</b>	<b>21</b>
EFFECT OF DIFFERENT HANDLING AND STORAGE CONDITIONS ON THE VOLATILE TERPENIC AND NORISOPRENOID COMPOUNDS FROM ELDERFLOWERS ( <i>SAMBUCUS NIGRA</i> L.).....	23
DEVELOPMENT AND CHARACTERIZATION OF B-LACTOGLOBULIN NANOHYDROGELS FOR BIOACTIVE COMPOUND DELIVERY.....	24
GASTRIC ABSORPTION AND METABOLISM OF FOOD PHENOLICS.....	25
<b>POSTER PRESENTATIONS.....</b>	<b>27</b>

PROTECTIVE ACTIVITY OF COFFEE SILVERSKIN EXTRACTS: EVALUATION ON ERYTHROCYTE OXIDATIVE-INDUCED HEMOLYSIS.	29
MICROALGAS COMO ALTERNATIVA VERDE NO DESENVOLVIMENTO DE PELÍCULAS PARA EMBALAGENS ALIMENTARES .....	30
PROTECTION OF CEREAL B-GLUCAN VISCOSITY WITH IRON BINDING PROTEINS.....	31
PHYTOCHEMICAL ANALYSIS OF THREE WILD EDIBLE PORTUGUESE FRUITS THAT MAY PROVIDE POTENTIAL HEALTH BENEFITS	32
NEW USES OF STRAWBERRY TREE BERRIES.....	33
CHARACTERIZATION OF THREE VARIETIES OF WALNUTS AND THEIR RESPECTIVE OILS .....	34
NATURAL CAROTENOID DYES FOR APPLICATION IN THE FOOD INDUSTRY: EXTRACTION, PHOTO AND THERMOSTABILITY .....	35
EFFECT OF DIFFERENT DIVALENT CATIONS ON THE SYNTHESIS OF $\alpha$ -LACTALBUMIN NANOTUBES .....	36
COMPOSTOS BIOATIVOS E FÍSICO-QUÍMICA DA POLPA E RESÍDUO DE ACEROLA ( <i>MALPIGHIA EMARGINATA</i> D.C.) .....	37
IN-VITRO RELEASE PROFILE OF MICROENCAPSULATED A-TOCOPHEROL UNDER SIMULATED GASTROINTESTINAL CONDITIONS	38
<i>ARBUTUS UNEDO</i> L. FRUITS AS A VALUABLE SOURCE OF BIOACTIVE COMPOUNDS: PHYTOCHEMICAL APPROACH ON LIPOPHILIC COMPONENTS.....	39
EFFECT OF MINIMAL PROCESSING ON BIOACTIVE COMPOUNDS AND ANTIOXIDANT ACTIVITY OF FRESH-CUT CACTUS PEAR..	40
PROPOLIS MICROENCAPSULATION ON DIFFERENT MATRICES AND RELEASE STUDIES .....	41
IDENTIFICAÇÃO E QUANTIFICAÇÃO DE COMPOSTOS BIOATIVOS NO BAGAÇO DE MAÇÃ .....	42
CAROTENOID PROFILE OF DIFFERENT READY-TO-EAT BABY-LEAF VEGETABLES BY HPLC-DAD-APCI-MS.....	43
<i>ERIOCEPHALUS AFRICANUS</i> : DERIVADOS DE ÁCIDO CAFEICO E SUAS POTENCIALIDADES .....	44
SUGAR COMPOSITION, PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF <i>P. TRIDENTATUM</i> AQUEOUS EXTRACTS: MICROPROPAGATED SHOOTS VS WILD PLANTS .....	45
MICROPARTÍCULAS DE ZEÍNA CARREGADAS COM TIMOL OBTIDAS POR <i>SPRAY-DRYING</i> : CARACTERIZAÇÃO FÍSICO-QUÍMICA.	46
PREPARAÇÃO DE MICROCÁPSULAS CONTENDO ÓLEO ESSENCIAL PELO MÉTODO SOL-GEL .....	47
AVALIAÇÃO DA ATIVIDADE ANTIOXIDANTE DE EXTRATOS DE GOIABEIRA <i>ACCA SELLOWIANA</i> VISANDO À PRODUÇÃO DE EMBALAGENS ATIVAS.....	48
ESTABILIZAÇÃO ENZIMÁTICA DO ÓLEO DE FARELO DE ARROZ.....	49
FUCOPOL AS ENCAPSULATING MATRIX OF BIOACTIVE COMPOUNDS .....	50
UTILIZAÇÃO DE UM MEIO DE EXTRACÇÃO ÚNICO PARA A DETECÇÃO DE PELARGONIDINA, HMF E PPO EM AMOSTRAS DE <i>FRAGARIA ANANASSA</i> .....	51
<b>SESSION 2 - DESIGN OF INNOVATIVE PACKAGING .....</b>	<b>53</b>
<b>ORAL PRESENTATIONS.....</b>	<b>55</b>
DEVELOPMENT OF ACTIVE EDIBLE COATINGS FOR THE PRESERVATION OF <i>AGARICUS BISPORUS</i> MUSHROOMS .....	57
DESIGN OF FILMS FOR FOOD APPLICATIONS BASED ON THE MICROBIAL POLYSACCHARIDE FUCOPOL .....	58
POST-HARVEST PRESERVATION OF CHERRIES USING BIOACTIVE EDIBLE COATINGS .....	59
<b>POSTER PRESENTATIONS.....</b>	<b>61</b>
MONITORIZAÇÃO DAS PROPRIEDADES DE TEXTURA, ORGANOLÉTICAS E MICROBIOLÓGICAS DO FIAMBRE FATIADO EMBALADO EM ATMOSFERA MODIFICADA AO LONGO DO SEU TEMPO DE VIDA .....	63
ESTUDO PARA AVALIAR O GRAU DE CONHECIMENTO DOS CONSUMIDORES SOBRE EMBALAGENS PLÁSTICAS .....	64
ALTERAÇÕES FÍSICO-QUÍMICAS E MICROBIOLÓGICAS NUM PRODUTO À BASE DE TOMATE EMBALADO EM DOYPACK, AO LONGO DO TEMPO DE PRATELEIRA.....	65
ENSINO PROFISSIONAL DE PROCESSAMENTO/CONTROLO DA QUALIDADE ALIMENTAR NO ENSINO SECUNDÁRIO E INTERLIGAÇÃO COM AS INDÚSTRIAS ALIMENTARES .....	66

ANTIFUNGAL AND ANTIOXIDANT EFFICACY OF <i>ALOE VERA</i> AND ITS POTENTIAL INCORPORATION IN CHITOSAN-BASED COATINGS FOR BLUEBERRIES PRESERVATION .....	67
INCREASING THE RESISTANCE TO WATER OF CHITOSAN-BASED EDIBLE FILMS.....	68
<b>SESSION 3 - FOOD FORMULATION AND PROCESSING .....</b>	<b>71</b>
<b>ORAL PRESENTATIONS.....</b>	<b>73</b>
IMPACT OF DEOXYGENATION ON QUALITY OF WHITE WINE .....	75
PRODUCTION AND ANALYSIS OF SWEET POTATO ( <i>IPOMOEA BATATAS L.</i> ) DISTILLATE .....	76
AVALIAÇÃO DA ESTABILIDADE FÍSICO-QUÍMICA E CARACTERIZAÇÃO DE NANOPARTÍCULAS DE ZEÍNA CARREGADAS COM ÓLEOS ESSENCIAIS .....	77
<b>POSTER PRESENTATIONS.....</b>	<b>79</b>
RELATIONSHIP BETWEEN VOLATILE PROFILE AND SENSORY CHARACTERISTICS OF MALVASIA FINA AND GOUVEIO MONOVARIETAL WINES FROM DOURO VALLEY.....	81
APPLICATION AND EVALUATION OF DIFFERENT FLOURS IN MORTADELLAS PROCESS .....	82
ELECTROSPUN FIBROUS MEMBRANES FOR JUICE FILTRATION/CLARIFICATION .....	83
VOLATILE PROFILE EVOLUTION DURING VINIFICATION PROCESS OF DIFFERENT <i>TINTA NEGRA</i> MADEIRA WINES STYLES.....	84
DEEP-FRIED POTATOES COLOUR: RELATIONSHIP BETWEEN SENSORIAL AND INSTRUMENTAL ANALYSIS .....	85
MASSA ALIMENTÍCIA ENRIQUECIDA COM POLIFENÓIS DE FOLHA DE Videira Vermelha .....	86
EFEITO DA CONFEÇÃO <i>COOK VIDE</i> EM <i>GASTROVAC</i> NA CARNE DE CABRITO CORRENTE.....	87
CARACTERIZAÇÃO FÍSICO-QUÍMICA, SENSORIAL E MICROBIOLÓGICA NA AVALIAÇÃO DO TEMPO DE PRATELEIRA DO CHICHARRO ( <i>TRACHURUS TRACHURUS</i> ) FUMADO ARMAZENADO EM ATMOSFERA MODIFICADA .....	88
BEST RICE 4-LIFE, IMPROVING RICE QUALITY THROUGH PORTUGUESE GERMPLASM BREEDING.....	89
BASE DE PIZZA SEM GLÚTEN A PARTIR DE SUBPRODUTOS DA INDÚSTRIA .....	90
CARACTERIZAÇÃO FÍSICO-QUÍMICA E SENSORIAL DE DOCES DE PÊSSEGO COM DIFERENTES TEORES DE AÇÚCAR .....	91
SINGLE-DOSE ESPRESSO COFFEE CAPSULES: A COMPLETE DATA SET CHARACTERIZATION OF BODY AND COLOR .....	92
RICE REHEATING: CHARACTERISTICS AND BEHAVIOUR.....	93
ORIGIN OF THE PINKING PHENOMENON OF WHITE WINES .....	94
EFFECT OF THERMAL PROCESSING ON THE PERFORMANCE OF A NOVEL REAL-TIME PCR SYSTEM FOR THE QUANTIFICATION OF SOYBEAN PROTEIN MATERIAL IN MEAT PRODUCTS .....	95
VALUATION OF APPLE JUICE CONCENTRATE BY-PRODUCTS .....	96
EFEITO DO BRANQUEAMENTO NA CAPACIDADE ANTIOXIDANTE DE ESPINAFRES, COURGETTES E COGUMELOS .....	97
EFFECT OF THE FERMENTATION EXTENSION ON THE POLYPHENOL CONTENT AND COLOUR OF THE <i>VITIS VINIFERA L.</i> RED GRAPES MUST TO PRODUCE A FORTIFIED WINE.....	98
EXTRUSÃO DE FARINHA DE TAPIOCA GRANULADA COM ADIÇÃO DE <i>HIBISCUS SP</i> PARA PRODUÇÃO DE CERERAL MATINAL ...	99
EVIDENCE OF THE FORMATION OF MAILLARD VOLATILE COMPOUNDS IN MODEL WINE SOLUTIONS PROMOTED BY HIGH PRESSURE TREATMENTS.....	100
FUNCTIONAL GOAT MILK YOGURT ENRICHED WITH WHEY PROTEINS, FIBER FROM <i>BETA VULGARIS</i> AND <i>VACCINIUM CYLINDRACEUM</i> PULP .....	101
TARTARIC STABILIZATION OF A RESERVE RUBY PORT WINE BY COLD AND ELECTRODIALYSIS PROCESSES: EFFECT ON CHEMICAL AND SENSORY CHARACTERISTICS.....	102

EFEITO DO TEMPERO NA COMPOSIÇÃO QUÍMICA E ACEITABILIDADE PELO CONSUMIDOR DE PASTAS DE AZEITONA "CV. COBRANÇOSA" .....	103
REMOÇÃO QUÍMICA DA PELE DE SARDINHA ( <i>SARDINA PILCHARDUS</i> ) COM HIDRÓXIDO DE POTÁSSIO - COMPARAÇÃO DO TEOR EM GORDURA ANTES E APÓS REMOÇÃO .....	104
DEVELOPMENT OF PÂTÉ LIVER FROM ALENTEJANO PIG .....	105
UTILIZATION OF VARIOUS SUBSTRATES FOR PRODUCTION OF ALCOHOLIC BEVERAGES ACCORDING TO SAKE MAKING TECHNIQUE .....	106
PROCESSING OF WILD LOBSTER ( <i>PALINURUS DELAGOAE</i> ): BIOCHEMICAL CHANGES .....	107
EFEITO DA SECAGEM POR AR QUENTE NA COR E PROPRIEDADES NUTRICIONAIS DE DUAS VARIEDADES DE CASTANHA ( <i>CASTANEA SATIVA</i> MILL.) .....	108
IDENTIFICATION OF HORSE MEAT ADULTERATION BY A SPECIES-SPECIFIC MITOCHONDRIAL DNA MARKER .....	109
CARACTERIZAÇÃO QUÍMICA DE AMÊNDOAS DE CACAU ( <i>THEOBROMA CACAO</i> L.) FERMENTADAS E SECAS RESISTENTES A VASSOURA-DE-BRUXA .....	110
ANÁLISE QUÍMICA DE CHOCOLATES COM DIFERENTES CONCENTRAÇÕES DE MASSA DE CACAU EM SUA FORMULAÇÃO ..	111
CHARACTERIZATION OF VOLATILE EXO-METABOLOME OF INDIGENOUS AND COMMERCIAL <i>SACCHAROMYCES CEREVISIAE</i> STRAINS TOWARDS THEIR OENOLOGICAL POTENTIAL .....	112
<b>SESSION 4 - FOOD SAFETY .....</b>	<b>113</b>
<b>ORAL PRESENTATIONS.....</b>	<b>115</b>
MATRIX EFFECTS IN UPLC-MS/MS ANTIBIOTICS MULTI-DETECTION METHODS IN FOOD PRODUCTS FROM ANIMAL ORIGIN .....	117
A 3-YEAR SURVEY ON GENETICALLY MODIFIED MAIZE IN MARKETED FOOD PRODUCTS .....	118
NUTRITIONAL SAFETY OF COMMERCIAL BAKERY PRODUCTS MANUFACTURED IN PORTUGAL .....	119
DETERMINAÇÃO DE ACRILAMIDA EM MATRIZES ALIMENTARES POR UPLC-PDA E UPLC-MS .....	120
<b>POSTER PRESENTATIONS.....</b>	<b>121</b>
EXPOSURE AND ACCUMULATION OF POTENTIALLY TOXIC ELEMENTS IN BASIL PLANTS ( <i>OCIMUM BASILICUM</i> ) .....	123
EXPOSURE AND ACCUMULATION OF POTENTIALLY TOXIC ELEMENTS IN ROCKET PLANTS ( <i>ERUCA SATIVA</i> ) .....	124
DETERMINAÇÃO DE Ca, K, Mg, Na, P e Zn em leite em pó comercializado em Aracaju, Sergipe, Brasil .....	125
DEVELOPMENT OF ANALYTICAL METHOD FOR DETERMINATION OF CHROMIUM IN INFANT FORMULAS EMPLOYING DIRECT SOLID SAMPLING AND HR-CS ET AAS .....	126
ANALYTICAL METHOD FOR THE COMBINED DETECTION OF SEVERAL BETA-AGONISTS AND DEXAMETHASONE IN URINE AND LIVER.....	127
CYCLAMATE IN COMMERCIAL TABLETOP SWEETENERS. RISK OF EXCEEDING THE ACCEPTABLE DAILY INTAKE.....	128
ACRYLAMIDE IN FRIED POTATOES: A NOVEL AND SIMPLE METHOD USING XANTHYDROL FOR ITS GC-MS DETERMINATION	129
POLYCYCLIC AROMATIC HYDROCARBONS IN MEAGRE <i>ARGYROSOMUS REGIUS</i> : COMPARISON BETWEEN WILD AND CULTURED SPECIMENS.....	130
MID INFRARED SPECTROSCOPY FOR MONITORING FISH PATHOGENIC BACTERIA CHANGES AFTER HPP TREATMENTS .....	131
EVALUATION OF THE LEVELS OF ARSENIC IN RICE AND RICE PRODUCTS AVAILABLE IN THE PORTUGUESE MARKET .....	132
USO DE PLANEJAMENTO FATORIAL PARA OTIMIZAÇÃO DE MÉTODO ANALÍTICO PARA DETERMINAÇÃO DE CONSTITUINTES INORGÂNICOS EM SUPLEMENTOS ALIMENTARES .....	133
INFLUENCE OF SEVERAL OENOLOGICAL FINING AGENTS ON OCHRATOXIN A REMOVAL .....	134

A ANÁLISE LABORATORIAL E A ROTULAGEM DE GÉNEROS ALIMENTÍCIOS DESTINADOS A UMA DIETA ISENTA DE GLÚTEN ...	135
POTENCIAL ANTAGÔNICO E ACIDIFICANTE DE <i>LACTOCOCCUS</i> ISOLADOS DE QUEIJO DE COALHO ARTESANAL PRODUZIDO EM VENTUROSA, REGIÃO AGRESTE DE PERNAMBUCO, BRASIL.....	136
DETERMINAÇÃO DO TEOR DE “SAL” EM DIFERENTES TIPOS DE PÃO POR POTENCIOMETRIA COM OPTIMIZAÇÃO DO PROCESSO DE EXTRACÇÃO. COMPARAÇÃO DA INCERTEZA DO MÉTODO COM A ESTIMADA PARA O MÉTODO DE REFERÊNCIA .....	137
AFLATOXIN B <sub>1</sub> AND ZEARALENONE IN DAIRY FEEDS - IMPLICATIONS FOR THE FOOD CHAIN IN PORTUGAL .....	138
COMPARISON OF DIFFERENT HIGH-THROUGHPUT METHODOLOGIES (LC-MS/MS, ELISA AND REAL-TIME PCR) TO DETECT HAZELNUT ALLERGENS IN CHOCOLATES .....	139
<i>HYPERICUM</i> SPECIES IDENTIFICATION TO ASSESS THE AUTHENTICITY OF PLANT FOOD SUPPLEMENTS .....	140
ATIVIDADE ANTIMICROBIANA DE PEPTÍDEOS EXTRAÍDOS DO LEITE DE OVELHA FERMENTADO POR GRÃOS DE KEFIR .....	142
POTENTIOMETRIC MAGNETO-IMMUNOASSAY FOR RAPID DETECTION OF <i>SALMONELLA TYPHIMURIUM</i> IN MILK.....	143
DEVELOPMENT OF A NEW AND HIGH-THROUGHPUT ULTRASOUND-ASSISTED $\mu$ -QUECHERS-BASED EXTRACTION TECHNIQUE COMBINED WITH UHPLC-FLR FOR DETERMINATION OF ZEARELENONE IN CEREALS.....	144
UTILIZAÇÃO DE FERRAMENTAS QUIMIOMÉTRICAS PARA OTIMIZAÇÃO DE MÉTODO ANALÍTICO E AVALIAÇÃO DA COMPOSIÇÃO MINERAL DE SUCOS INDUSTRIALIZADOS .....	145
DEVELOPMENT AND VALIDATION OF A VOLTAMMETRIC BIOSENSOR FOR THE DETECTION OF A MAJOR PEANUT ALLERGEN IN FOODSTUFFS.....	146
DEVELOPMENT OF A DLLME EXTRACTION PROCEDURE FOR THE GC-MS DETERMINATION OF EIGHTEEN BIOGENIC AMINES IN LIQUORS .....	147
ESSENTIAL ELEMENTS AND CONTAMINANTS ON THREE PELAGIC FISH SPECIES RAW AND COOKED.....	148
AVALIAÇÃO DE MACRO E MICRO ELEMENTOS EM RAÇÕES DE CÃES E DE GATOS EM RELAÇÃO AOS VALORES ESTABELECIDOS POR AGÊNCIAS REGULADORAS .....	149
CHARACTERIZATION OF A BACTERIOCIN PRODUCED BY A <i>LACTOCOCCUS LACTIS</i> STRAIN ISOLATED FROM PICO CHEESE .....	150
TOTAL MERCURY IN INFANT FOOD: A CONTRIBUTION TO EFSA’ S COLLECTION OF CHEMICAL CONTAMINANTS OCCURRENCE DATA.....	151
O SENSOR ELETROQUÍMICO DE NITRITO, BASEADO EM POLI( <i>p</i> -AMINOACETANILIDA). O DESEMPENHO E A SUA DESCRIÇÃO MATEMÁTICA .....	152
<b>SESSION 5 - DESIGN OF INNOVATIVE HEALTHY FOODS .....</b>	<b>153</b>
<b>ORAL PRESENTATIONS.....</b>	<b>155</b>
ACOMPANHAMENTO DO PROCESSO FERMENTATIVO DA PRODUÇÃO DE ALIMENTOS FUNCIONAIS INOVADORES À BASE DE TREMOÇO E ERVILHA COM BASE NO MÉTODO DE PRODUÇÃO DE TEMPÉ DE SOJA .....	157
DESENVOLVIMENTO E ACEITABILIDADE DE MASSA QUEBRADIÇA DOCE ISENTA DE GLÚTEN .....	158
THE QUEST FOR CELIAC-SAFE WHEAT PRODUCTS: MICROBIAL TRANSGLUTAMINASE-MEDIATED TRANSAMIDATION OF WHEAT FLOUR AND GLUTEN WITH BUTYLAMINE REDUCES THE TOXIC EPITOPES FOR CELIAC PATIENTS .....	159
<b>POSTER PRESENTATIONS.....</b>	<b>161</b>
SENSORY AND TEXTURAL CHARACTERIZATION OF CITRUS AND PINEAPPLE FRUITS CANDIED WITH HEALTHY COMPONENTS	163
INFLUENCE OF GRAPE POMACE EXTRACT ON THE QUALITY CHARACTERISTICS OF THE MECHANICALLY DEBONED CHICKEN MEAT (MDM): TOWARDS FUNCTIONAL FOODS .....	164
ANTIOXIDANT ACTIVITY, TOTAL PHENOLIC AND TOTAL FLAVONOID IN PEEL AND PULP OF TAMARILLO FRUIT FROM AZORES. COMPARISON WITH PASSION FRUIT .....	165

FORMULAÇÃO DE BOLACHAS PARA COMPLEMENTO DA DIETA DE CRIANÇAS EM IDADE ESCOLAR DE SÃO TOMÉ E PRÍNCIPE .....	166
COMPOSITION AND FUNCTIONAL PROPERTIES OF TRADITIONAL AND EXOTIC APPLE CULTIVARS FROM PORTUGAL .....	167
SELECTION OF FINEST CULTIVAR AND RIPENING STAGE OF <i>SAMBUCUS NIGRA</i> FRUIT THROUGH COMPARISON OF PHENOLIC AND ENZYMATIC PROFILES.....	168
VALORIZAÇÃO DE UM SUBPRODUTO PROVENIENTE DO ESTÁGIO DO VINHO DO PORTO: BORRAS FINAS DE VINHOS VINTAGE E TAWNY COMO MATÉRIA-PRIMA DE UM NOVO PRODUTO ALIMENTAR .....	169
GREEN COOKIES WITH <i>CHLORELLA VULGARIS</i> POWDER BY ARTICOOKIES .....	170
HEALTH-PROMOTING POTENTIAL OF LACTIC ACID BACTERIA ISOLATED FROM ARTISANAL PICO CHEESE .....	171
DESENVOLVIMENTO DE RECHEIOS HIPOCALÓRICOS PARA BOMBONS COM IMPACTO POSITIVO NA SAÚDE.....	172
<b>SESSION 6 P- RODUCT DEVELOPMENT FOR THE INDUSTRY.....</b>	<b>173</b>
<b>ORAL PRESENTATIONS.....</b>	<b>175</b>
BREAD WITH BREWER’S SPENT GRAIN: TECHNOLOGY FOR BY-PRODUCT VALORISATION BY NEW BAKERY PRODUCTS DEVELOPMENT.....	177
PRODUCTION OF PROBIOTIC YOGURT UNDER HIGH PRESSURE CONDITIONS – A CASE- STUDY OF MICROBIAL FERMENTATION UNDER PRESSURE .....	178
SORVETES REGIONAIS: FONTE DE FIBRAS, ISENTOS DE LACTOSE COMO ALIMENTO FUNCIONAL E TESTE DE ACEITABILIDADE E PREFERÊNCIA MERCADOLÓGICA NO AMAPÁ – BRASIL .....	179
<b>POSTER PRESENTATIONS.....</b>	<b>181</b>
PREPARATION OF READY TO EAT “PASTÉIS DE NATA” AFTER DOMESTIC MICROWAVE OVEN HEATING .....	183
APLICAÇÃO DA ANÁLISE QUANTITATIVA DESCRITIVA PARA A AVALIAÇÃO DE PRODUTOS INOVADORES RESULTANTES DA APLICAÇÃO DE NOVAS TECNOLOGIAS DE PROCESSAMENTO: TREINO E AVALIAÇÃO DE CINCO PAINÉIS SENSORIAIS.....	184
EFFECT OF HYDROCOLLOIDS ON LOW-FAT CHOCOLATE FILLINGS .....	185
PRODUÇÃO DE B-GALACTOSIDASE EXTRACELULAR EM SORO DE LEITE POR LEVEDURAS ISOLADAS DE QUEIJO DE COALHO ARTESANAL .....	186
SHELF-LIFE OF LOW-FAT CHOCOLATE FILLINGS .....	187
DESENVOLVIMENTO DE UM PRODUTO DE CONFEITARIA DE GRANDE CONSUMO COM BENEFÍCIOS NA SAÚDE .....	188
OPTIMIZATION, VALIDATION AND APPLICATION OF A METHOD BASED ON LIQUID-LIQUID EXTRACTION-GAS CHROMATOGRAPHY-MASS (...) DETERMINATION OF 4-ETHYLPHENOL AND 4-ETHYLGUAIACOL IN RED WINE.....	189
HIGH PRESSURE PROCESSING OF READY-TO-EAT BOILED EGGS TO EXTEND SHELF-LIFE.....	190
<i>ARBUTUS UNEDO</i> L. FRUIT DISTILLATES AND THE REQUIREMENT FOR FURTHER QUALITY SPECIFICATIONS .....	191
VALORIZAÇÃO DE SUBPRODUTOS DO PROCESSAMENTO INDUSTRIAL DE BRÓCOLO .....	192
EFFECT OF ROASTING ON CHEMICAL COMPOSITION OF COFFEE: GROUND POWDER VS ESPRESSO BREW .....	193
CONCENTRATION OF BEVERAGES BY OSMOTIC EVAPORATION: EFFECT ON ORGANOLEPTIC PROPERTIES AND ANTIOXIDANT ACTIVITY .....	194
SHELF-LIFE EXTENSION OF A READY-TO-EAT DUCK RICE MEAL PROCESSED BY HIGH PRESSURE .....	195
ELDERBERRY BRANCHES AS POTENTIAL AND ALTERNATIVE SOURCE OF PHENOLIC COMPOUNDS TO FOOD AND PHARMACEUTICAL INDUSTRIES.....	196
A CONGELAÇÃO COMO FATOR DE VALORIZAÇÃO COMERCIAL DO CHICHARRO AÇORIANO ( <i>TRACHURUS PICTURATUS</i> ) .....	197

<b>SESSION 7 - NUTRITIONAL BALANCE AND NOVEL FOODS .....</b>	<b>199</b>
<b>ORAL PRESENTATIONS.....</b>	<b>201</b>
<i>ULVA RIGIDA</i> AN AZOREAN MACROALGAE WITH NUTRITIONAL AND HUMAN HEART-HEALTHY BENEFITS.....	203
CARACTERIZAÇÃO DO FRUTO E SEMENTE DE DUAS VARIEDADES DE FIGOS DE PITEIRA DA REGIÃO ALGARVIA .....	204
ASSOCIATIONS BETWEEN DIETARY MACRONUTRIENTS AND THE LIPOPHILIC INDEX IN HUMAN BIOMEMBRANES .....	205
<b>POSTER PRESENTATIONS.....</b>	<b>207</b>
FACTORES DE RETENÇÃO DE MINERAIS E AMINOÁCIDOS EM PIPOCAS DE QUINOA .....	209
COMPOSIÇÃO NUTRICIONAL DAS MACROALGAS <i>BIFURCARIA BIFURCATA</i> E <i>SARGASSUM MUTICUM</i> DA COSTA LITORAL PORTUGUESA .....	210
VARIATION OF RICE COMPOSITION: COMPARISON OF TWO DIFFERENT CULTURES .....	211
NUTRITIONAL COMPOSITION OF FOUR SAMPLES OF COMMERCIAL ORANGE JUICE.....	212
VITAMIN C CONTENT: FRESH HOMEMADE VS. COMMERCIAL ORANGE JUICES.....	213
NUTRITIONAL PROFILE OF EDIBLE MARINE MACROALGAE: MACRONUTRIENTS .....	214
<i>SALVIA SCLAREOIDES</i> AS A SOURCE OF FUNCTIONAL FOOD INGREDIENTS TO PREVENT NEURODEGENERATIVE DISORDERS .	215
DETERMINAÇÃO DO PERFIL DE ÁCIDOS GORDOS DO QUEIJO DA ILHA DO PICO EM FUNÇÃO DO TEMPO DE MATURACÃO ...	216
SCREENING OF MARINE MICROALGAE FATTY ACIDS COMPOSITION .....	217
CARACTERIZAÇÃO DA FRAÇÃO LIPÍDICA DE 28 AMOSTRAS DE CACAU DE SÃO TOMÉ E PRÍNCIPE .....	218
CARACTERIZAÇÃO DO PERFIL DE AMINOÁCIDOS DA CARNE DO PEITO DE FAISÃO ( <i>PHASANIUS COLCHICUS</i> ).....	219
RELAÇÃO ENTRE AS CARACTERÍSTICAS CROMÁTICAS E AS PROPRIEDADES ANTIOXIDANTES DE VINHOS PORTUGUESES TINTOS, BRANCOS E ROSÉS.....	220
NUTRITIONAL VALUE OF SERPENTINE ( <i>DRACUNCULUS VULGARE</i> ) FLOUR. DETERMINATION OF PROTEIN, TOTAL CARBOHYDRATES, TOTAL LIPIDS, FATTY ACIDS AND AMINO ACIDS PROFILES.. .....	221
DETERMINAÇÃO DE MACRONUTRIENTES EM TRÊS VARIEDADES DE CASCA, FARELO E GRÃO DE ARROZ PORTUGUÊS.....	222
O CONHECIMENTO DA POPULAÇÃO PORTUGUESA SOBRE ALGUMAS ESPÉCIES DE FRUTOS DA MACARONÉSIA .....	223
A REVIEW ON NUTRITIONAL COMPOSITION, ANTIOXIDANT ACTIVITY AND BIOACTIVE COMPOUNDS CONTENT OF TRADITIONAL FRUITS FROM MADEIRA ISLAND .....	224
SODIUM INTAKE AND DIETARY SOURCES OF SODIUM IN PORTUGUESE ELDERLY .....	225
NUTRITIONAL VARIABILITY OF THE <i>FUCUS SPIRALIS</i> BIOCHEMICAL COMPOSITION WITH SEASONAL CONDITIONS AND GEOGRAPHIC ORIGIN .....	226
NUTRITIONAL VALUE OF CANNED FISH CONSUMED IN PORTUGAL.....	227
AZOREAN WILD SAFFRON ( <i>CARTHAMUS TINCTORIUS</i> ): AMINO ACIDS AND FATTY ACIDS PROFILES, TOTAL CARBOHYDRATES, TOTAL POLYPHENOLS AND ANTIOXIDANT ACTIVITY .....	228
AMAZONAS'S YAM: NUTRITIONAL POTENTIAL .....	229
POLPAS DE FRUTOS PREBIÓTICAS ENRIQUECIDAS COM INULINA.....	230
VARIAÇÃO DA COMPOSIÇÃO QUÍMICA E ACTIVIDADE ANTIOXIDANTE DE PRÓPOLIS EM FUNÇÃO DA ÉPOCA DE COLHEITA..	231
LEVELS OF ANTIOXIDANTS IN SIMPLE AND COMBINED FORMS OF FRUITS AND VEGETABLES: LEAF LETTUCE ( <i>LACTUCA SATIVA</i> L., VAR. <i>CRISPA</i> ) AND CAPE GOOSEBERRY ( <i>PHYSALIS PERUVIANA</i> ) .....	232
CARACTERIZAÇÃO QUÍMICA DA <i>FUCUS VESICULOSUS</i> DA COSTA LITORAL PORTUGUESA .....	233
THE EFFECT OF GAMMA IRRADIATION ON THE NUTRITIONAL AND SENSORY PROPERTIES OF SHAKES OF THE GREEN BANANA .....	234
URINARY INDICATORS OF HYDRATION STATUS IN INSTITUTIONALIZED AND COMMUNITY-DWELLING ELDERLY PEOPLE .....	235

HORSE MACKEREL ( <i>TRACHURUS TRACHURUS</i> ): WEIGHING THE BENEFITS AND RISKS.....	236
COMPOSIÇÃO NUTRICIONAL E CARACTERIZAÇÃO FENÓLICA DE FOLHAS DE <i>BETA VULGARIS</i> L. ....	237
<b>SESSION 8 - FOOD STRUCTURE .....</b>	<b>239</b>
<b>ORAL PRESENTATIONS.....</b>	<b>241</b>
IDENTIFICATION OF CAFFEIC ACID AS THE MAJOR COMPOUND PRESENT IN MOSCATEL WINE PROTEIN HAZE HYDROLYSATE. 243	
CARACTERIZAÇÃO ESTRUTURAL DE POLISSACARÍDEOS SULFATADOS PRESENTES NO SAL E NAS SALMOURAS DAS SALINAS MARINHAS .....	244
EFEITO DA ADIÇÃO DE SUCO DE LIMÃO E DE ABACAXI NA TEXTURA DE 4 TIPOS DE CORTES DE CARNE BOVINA QUANDO SUBMETIDOS À TÉCNICA DE COCÇÃO SALTEAR .....	245
<b>POSTER PRESENTATIONS.....</b>	<b>247</b>
COMPARATIVE ANALYSIS BETWEEN THE COMPOSITION AND TEXTURE OF TRADITIONAL "REQUEIJÃO" AND WHEY CHEESES MADE FROM WHEY PROTEIN CONCENTRATES OF ULTRAFILTRATION .....	249
INFLUENCE OF CULTURE MEDIUM GROWTH VARIABLES ON <i>GANODERMA LUCIDUM</i> EXOPOLYSACCHARIDES STRUCTURAL FEATURES .....	250
TOCOPHEROLS IN RAINBOW TROUT ( <i>ONCORHYNCHUS MYKISS</i> ) MUSCLE: OPTIMIZATION AND VALIDATION OF AN EXTRACTION METHOD.....	251
SALVIA ELEGANS: UMA FONTE NATURAL DE COMPOSTOS ANTIOXIDANTES .....	252
<i>THYMUS PSEUDOLANUGINOSUS</i> : CARACTERIZAÇÃO FENÓLICA E ATIVIDADE ANTIOXIDANTE .....	253
INFLUENCE OF THE STRUCTURAL FEATURES OF CARBOXYMETHYLCELLULOSE ON WHITE WINE TARTARIC STABILIZATION ...	254
INFLUENCE OF STRUCTURAL FEATURES OF MANNOPROTEINS IN WHITE WINE PROTEIN STABILIZATION .....	255
<b>SESSION 9 - CHEMOMETRICAL MODELS .....</b>	<b>257</b>
<b>ORAL PRESENTATIONS.....</b>	<b>259</b>
TOWARDS THE AUTHENTICATION OF HONEY: DNA EXTRACTION METHODS FOR THE BOTANICAL ORIGIN IDENTIFICATION 261	
APLICAÇÃO DA MODELIZAÇÃO POR REDES NEURONAIS AO TEOR DE COMPOSTOS FENÓLICOS E ATIVIDADE ANTIOXIDANTE EM BANANAS DE DIFERENTES CULTIVARES SECADAS SOB CONDIÇÕES DISTINTAS .....	262
<i>IN VITRO</i> MODULATION OF COFFEE POLYSACCHARIDES IMMUNOSTIMULATORY ACTIVITY BY CHLOROGENIC ACIDS AND CAFFEINE .....	263
<b>POSTER PRESENTATIONS.....</b>	<b>265</b>
DETERMINAÇÃO DO PERFIL DE COMPOSTOS FENÓLICOS DE CHÁS VERDES DOS AÇORES E COMERCIAIS POR HPLC-DAD ..	267
DETERMINAÇÃO DA COMPOSIÇÃO MINERAL E COMPOSTOS FENÓLICOS TOTAIS DE CHÁS VERDES E PRETOS DOS AÇORES .	268
MINERAL CHARACTERIZATION OF PORTUGUESE BREADS.....	269
CHERRY TOMATO FRUITS: A COMPARATIVE STUDY ON ANTIOXIDANT PROPERTIES OF DIFFERENT CULTIVARS.....	270
COMMON COMPONENT AND SPECIFIC WEIGHT ANALYSIS - MULTI-BLOCK TECHNIQUE FOR COMPARISON OF DIFFERENT MEASUREMENT TECHNIQUES: APPLICATION TO THE ANALYSIS OF WINE AND COFFEE.....	271
INFLUENCE OF ORIGIN OF CACAO ON THEIR COMMERCIAL, FUNCTIONAL AND SENSORIAL QUALITY. CASE STUDY OF CATONGO CACAO FROM SÃO TOMÉ AND PRÍNCIPE AND BRASIL .....	272
DETERMINAÇÃO DO CONTEÚDO FENÓLICO TOTAL E ATIVIDADE ANTIOXIDANTE DO MEL.....	273
CARACTERIZAÇÃO QUÍMICA E ATIVIDADE ANTIOXIDANTE DO ÓLEO DE PALMA DE SÃO TOMÉ E PRÍNCIPE .....	274

VOLATILE COMPONENTS OF VINE LEAVES FOR HERBAL INFUSIONS PRODUCTION FROM TWO RED GRAPE VARIETIES ANALYZED BY SOLID-PHASE MICROEXTRACTION .....	275
NATURE OF PHENOLIC COMPOUNDS IN COFFEE MELANOIDINS .....	276
DETERMINAÇÃO DE CIANOCOBALAMINA (VITAMINA B <sub>12</sub> ) EM FÓRMULAS INFANTIS POR UPLC-MS/MS .....	277
OTIMIZAÇÃO DO TAMPÃO DE EXTRAÇÃO DA AMOSTRA PARA A DETERMINAÇÃO DE FOLATOS POR UPLC-MS/MS .....	278
ANTIOXIDANT CAPACITY, PHENOLIC CONTENT AND TOTAL FLAVONOIDS OF ORANGE JUICE .....	279
DNA BARCODING COUPLED TO HIGH RESOLUTION MELTING ANALYSIS FOR SAFFRON ( <i>CROCUS SATIVUS</i> L.) AUTHENTICATION .....	280
DESENVOLVIMENTO DE MÉTODO PARA DETERMINAÇÃO SIMULTÂNEA DE Cd E Sn EM AMOSTRA DE MILHO ENLATADO POR HR-CS ET AAS .....	281
HARVEST SEASON EFFECT ON CHEMICAL CHARACTERISTICS OF DAY-NEUTRAL STRAWBERRY CULTIVAR ‘SAN ANDREAS’ .....	282
CARACTERÍSTICAS AROMÁTICAS E SENSORIAIS DOS VINHOS .....	283
OPTIMIZATION OF ANALYTICAL METHODS FOR THE MULTIELEMENT DETERMINATION OF THE INORGANIC CONSTITUENTS AND CHARACTERIZATION IN FLOUR SAMPLES USING CHEMOMETRIC TOOLS.....	284
MEASURING THE RED COLOR OF BERRY JUICES FROM DIGITAL IMAGES USING IMAGE ANALYSIS .....	285
CARACTERIZAÇÃO DE ANTIOXIDANTES NA CASCA, FARELO E GRÃO DE ARROZ PORTUGUÊS POR UPLC-PDA .....	286
ANTIOXIDANT ACTIVITY AND CYTOTOXIC EFFECTS OF POLAR EXTRACTS FROM SAFFRON ( <i>CROCUS SATIVUS</i> L.) FLOWERS ..	287
AVALIAÇÃO DA ACTIVIDADE ANTIOXIDANTE E ANTIMUTAGÉNICA DE DIFERENTES INFUSÕES MEDICINAIS: URTIGA-BRANCA, DENTE DE LEÃO, PRÍNCIPE E CARQUEJA .....	288
CARACTERIZAÇÃO FÍSICO-QUÍMICA E AVALIAÇÃO DA ATIVIDADE ANTIOXIDANTE DE ROMÃS DA CULTIVAR MOLLAR DE ÉLCHE AO LONGO DA MATURAÇÃO .....	289
CARACTERIZAÇÃO FÍSICO-QUÍMICA DE NOVE CULTIVARES DE ROMÃ COLHIDAS EM ESPANHA.....	290
DEVELOPMENT SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF CHLORAMPHENICOL IN SHRIMP FARMING ENVIRONMENT.....	291
PHENOLIC PROFILE AND ANTIOXIDANT ACTIVITY OF DECOCTIONS OBTAINED FROM THE MEDICINAL PLANT <i>ERICA AUSTRALIS</i> .....	292
INFLUÊNCIA DOS FATORES AMBIENTAIS, DE PRODUÇÃO E DO GRAU DE AMADURECIMENTO NAS PROPRIEDADES ANTIOXIDANTES E ANTIMUTAGÉNICAS DE DIFERENTES CULTIVARES DE MIRTILO PRODUZIDAS EM PORTUGAL .....	293
PARÂMETROS DE CARACTERIZAÇÃO DE CAFÉ ENCAPSULADO.....	294
DETERMINAÇÃO DIRETA DE CÁDMIO E MERCÚRIO EM VINAGRE DE ÁLCOOL EMPREGANDO ESPECTROMETRIA DE ABSORÇÃO ATÔMICA .....	295
EVALUATION OF THE ANTIOXIDANT POTENTIAL OF <i>CASTANEA SATIVA</i> BY-PRODUCTS: SHELL AND BUR .....	296
DIETARY <i>TRANS</i> -FATTY ACIDS CORRELATED NEGATIVELY WITH ESTIMATION ACTIVITY OF STEAROYL-CoA DESATURASE ....	297
PHENOLIC PROFILE OF FLESH AND SKIN OF TRADITIONAL AND EXOTIC APPLE CULTIVARS FROM PORTUGAL .....	298
DIFFERENTIATION OF THE VOLATOMIC PATTERN OF SEVERAL <i>PASSIFLORA</i> L. SPECIES BASED ON HEADSPACE SOLID PHASE MICROEXTRACTION COMBINED WITH GAS CHROMATOGRAPHY-MASS SPECTROMETRIC ANALYSIS .....	299
AVALIAÇÃO DOS COMPOSTOS FENÓLICOS E ATIVIDADE ANTIOXIDANTE EM MIRTILOS DE DIFERENTES PROVENIÊNCIAS GEOGRÁFICAS .....	300
VALORIZAÇÃO DE SUBPRODUTOS DA VINHA E DO VINHO – COMPOSIÇÃO FENÓLICA E ACTIVIDADE ANTIOXIDANTE.....	301
DEVELOPMENT AND OPTIMIZATION OF METHOD FOR DETERMINATION OF ARSENIC (As) IN CANNED SARDINES AND TUNA BY HG AFS .....	302

<b>SESSION 10 - COMBINED TECHNIQUES: RHEOLOGY AND PHYSICAL PROPERTIES .....</b>	<b>303</b>
<b>ORAL PRESENTATIONS.....</b>	<b>305</b>
SENSORY EVALUATION OF READY-TO-EAT CABBAGE AND GREEN BEANS STORED IN MAP: CORRELATION AMONG MINERAL, BIOACTIVE ANT TEXTURAL COMPOSITION .....	307
SUBSTITUIÇÃO DO AMIDO DE MILHO POR GOMA XANTANA NA PREPARAÇÃO DE CREMES DE PASTELEIRO: IMPACTO NAS COMPONENTES DE TEXTURA E DE AROMA .....	308
PRODUCTION OF WHEY PROTEIN COLD-SET HYDROGELS THROUGH APPLICATION OF MODERATE ELECTRIC FIELDS .....	309
<b>POSTER PRESENTATIONS.....</b>	<b>311</b>
INFLUENCE OF MOLECULAR WEIGHT AND DEGREE OF POLYMERIZATION OF THE AMYLOPECTIN CHAINS IN THE RHEOLOGICAL PROPERTIES OF STARCH CHESTNUT LONGAL AND LADA VARIETY .....	313
DESENVOLVIMENTO DE UM MIX DE PANIFICAÇÃO ISENTO DE GLÚTEN A PARTIR DE SUBPRODUTOS ALIMENTARES.....	314
AValiação REOLÓGICA DA INTERAÇÃO SINERGÍSTICA DE POLPA DE CUPUAÇU E BIOPOLÍMEROS.....	315
INFLUENCIA DA TEMPERATURA E CONCENTRAÇÃO NOS PARÂMETROS REOLÓGICOS DE DISPERSÃO ALIMENTÍCIA DERIVADO DE FRUTA TROPICAL .....	316
BOLACHAS SEM GLÚTEN A PARTIR DE SUBPRODUTOS DA INDÚSTRIA .....	317
DOSEAMENTO DE CAFÉINA EM CHÁ PRETO COM DIFERENTES TEMPOS DE EXTRACÇÃO .....	318
COMPORTAMENTO VISCOELÁSTICO DO NÉCTAR DE CACAU COM GOMA XANTANA, GUAR E LOCUSTA .....	319
<b>INDEX OF AUTHORS .....</b>	<b>321</b>
<b>SPONSORS .....</b>	<b>331</b>

## In-vitro release profile of microencapsulated $\alpha$ -tocopherol under simulated gastrointestinal conditions

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Alpha-tocopherol, the most common form of Vitamin E in nature, is a well-known antioxidant compound for its effective inhibition of lipid oxidation both in food and biological systems. Additionally, due to its preventive action against reactive oxygen species (ROS),  $\alpha$ -tocopherol has been associated with risk decreasing of diseases associated with oxidative stress, such as cardiovascular disease and cancer [1]. The recommended ingestion of Vitamin E varies among the countries and according to criteria such as sex and age. In the USA, the recommended daily allowance (RDA) for an adult is 15 mg/day, whereas in Europe it is 4-15 and 3-12 mg  $\alpha$ -tocopherol/day for man and women, respectively. Although  $\alpha$ -tocopherol is naturally present in several foods, such as vegetable oils and tree nuts, owing to its antioxidant capacity it is frequently included in food supplements and used in the food industry to extend the shelf-life of several products. Nevertheless, due to  $\alpha$ -tocopherol instability and sensitivity towards oxygen and light and its poor aqueous solubility, it is generally administered in the acetate or succinate form. However, these forms are considered to have a lower intestinal absorption compared to  $\alpha$ -tocopherol [2]. To overcome these problems, the encapsulation of  $\alpha$ -tocopherol in protective matrixes to avoid its oxidation and increase shelf life has been suggested. In fact, during the last years, encapsulation technology has been increasingly important in the food industry as it permits the formation of a physical barrier between the external medium and sensitive core materials, being also used for controlled release of active molecules, formulation stability enhancement, and flavor and taste masking. In this context, it is important to assess  $\alpha$ -tocopherol release pattern from microparticles as it can restrain its different applicability.

In this work,  $\alpha$ -tocopherol microspheres were produced using alginate as a polymeric matrix. This polymer, a linear polysaccharide obtained from brown algae consisting of  $\beta$ -mannuronic acid and  $\alpha$ -guluronic acid units, was chosen due to its biocompatibility, biodegradability and non-toxicity. Moreover, it presents a high stability at acidic pH, being easily swollen under mild alkali conditions. Alginate microspheres (ME) loaded with  $\alpha$ -tocopherol were produced using a NISCO Var J30 atomization unit, following a previously optimized methodology. The produced microspheres were evaluated for encapsulation efficiency and  $\alpha$ -tocopherol release profile by measuring the absorbance at 297 nm using a spectrophotometer. The encapsulation efficiency was calculated both by directly measuring the maximum content released after ME disruption and by quantifying the nonencapsulated  $\alpha$ -tocopherol present in the CaCl<sub>2</sub> coagulation solution and in the wash solution.  $\alpha$ -Tocopherol in-vitro release profiles were determined under simulated gastric (pH 1.2) and intestinal (pH 7.4) media during a period of 24 hours. Additionally, a sample of ME were mixed in gastric media during 1h and then transferred to intestinal media until a total of 24h to simulate gastrointestinal conditions. During the testing period samples of the supernatant were periodically taken to determine the amount of released  $\alpha$ -tocopherol. Results evidence a very low % of  $\alpha$ -tocopherol release under acidic conditions while an almost complete release is achieved when ME were submitted to simulated intestinal conditions suggesting that the proposed approach can constitute an interesting solution to protect  $\alpha$ -tocopherol, allowing for its release in the intestine after ingestion. The next steps in this work in progress will include the evaluation of release profiles of ME added to different food matrices.

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### References:

- [1] A Brigelius-Flohé, M Traber, J Fed Am Soc Exp Biol (FASEB) 1999, 13, 1145–1155.
- [2] E Herrera, C Barbas, J Physiol Biochem, 2001, 57, 43-56.