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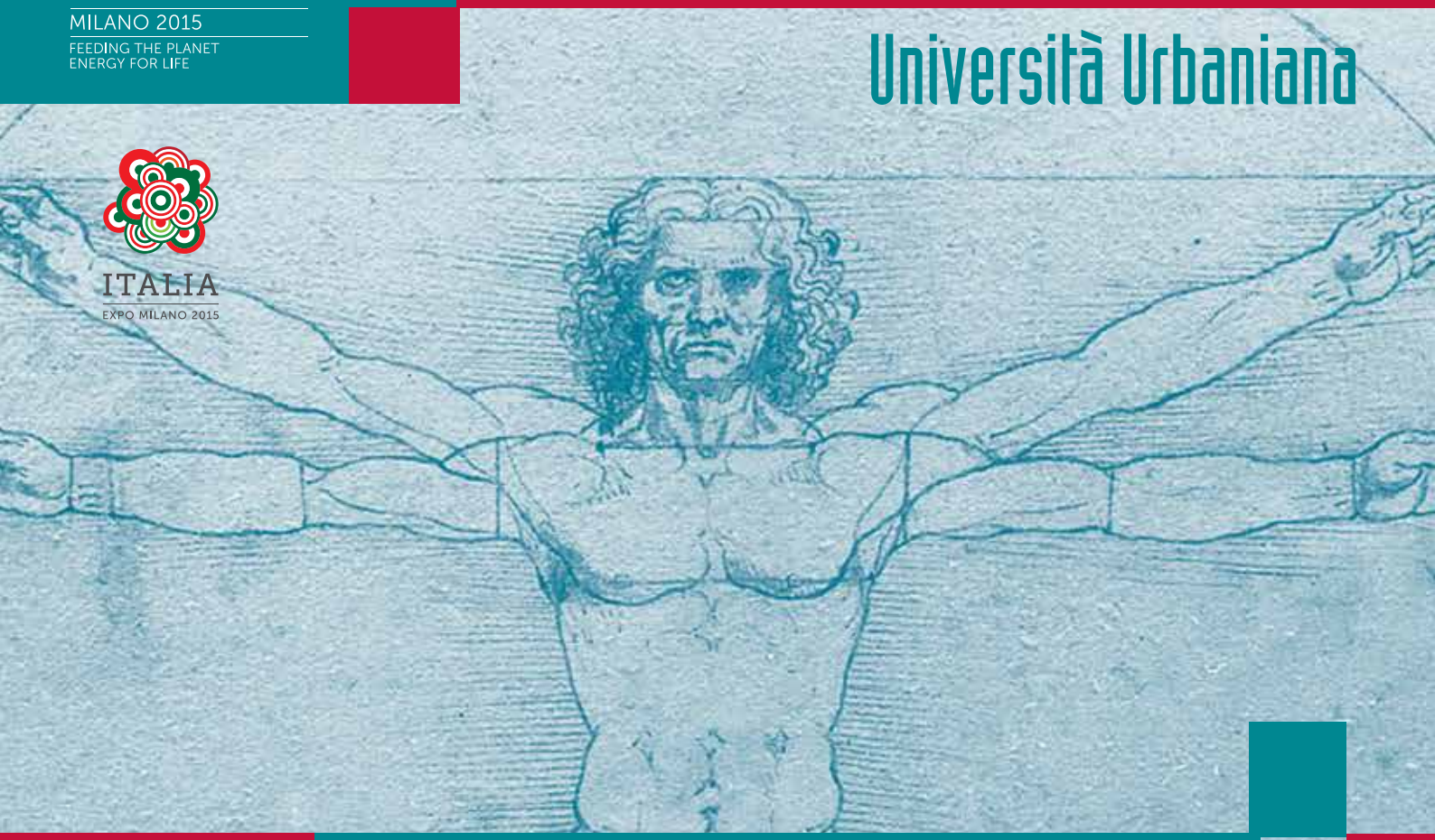
EXPO MILANO 2015

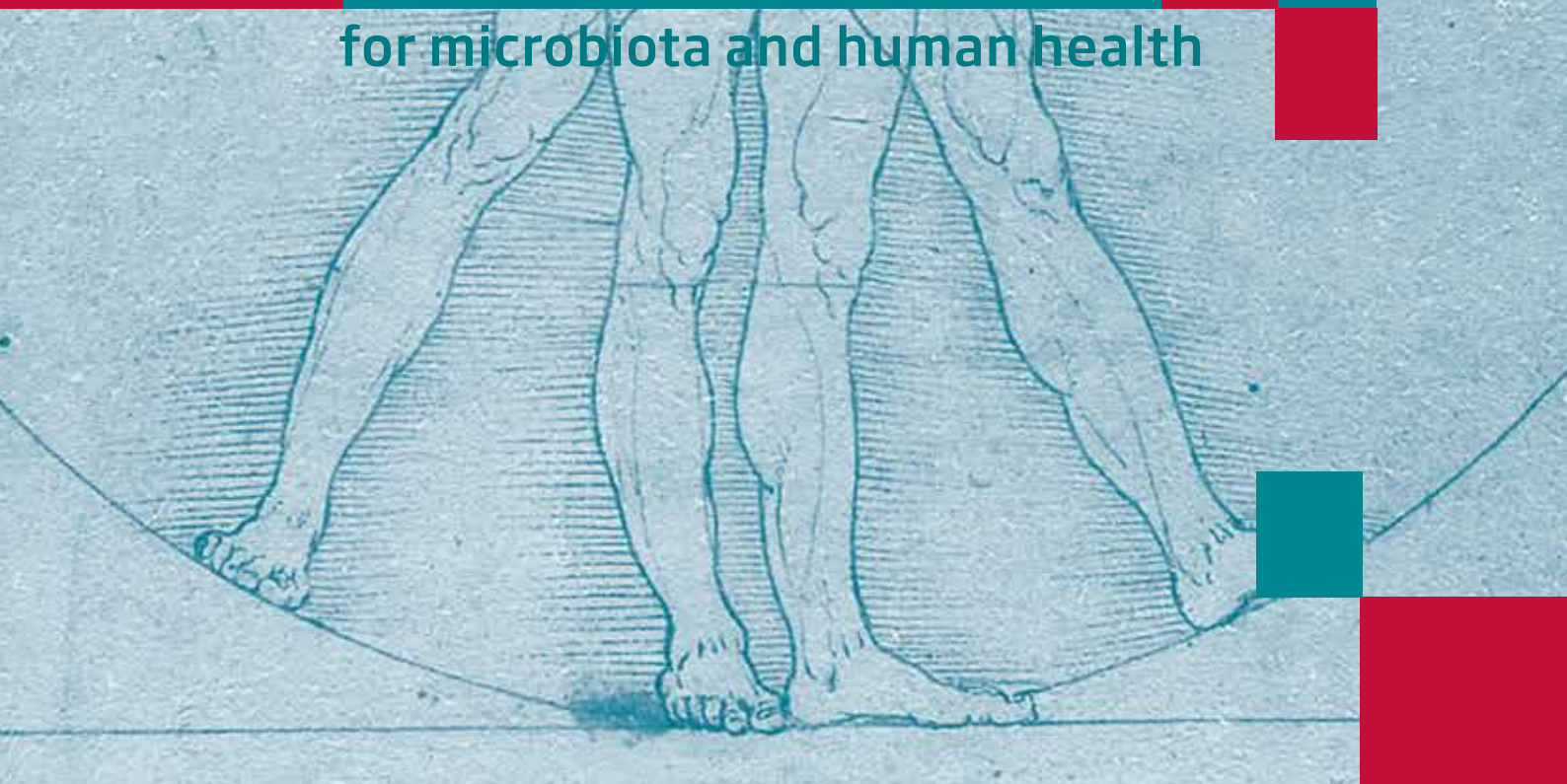
Rome - September 13/15, 2015

Università Urbaniana



8TH PROBIOTICS, PREBIOTICS & NEW FOODS

for microbiota and human health



SCIENTIFIC ORGANISERS

L. Capurso (Italy)

L. Morelli (Italy)

INTERNATIONAL SCIENTIFIC COMMITTEE

G. Barbara (Italy)

P. Brigidi (Italy)

G. Delle Fave (Italy)

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V. Fogliano (The Netherlands)

A. Gasbarrini (Italy)

F. Guarner (Spain)

M. Rescigno (Italy)

K. Tuohy (Italy)

PEDIATRIC DAY

A. Guarino (Italy)

SCIENTIFIC SECRETARIAT

G. Capurso (Italy)

M. Elli (Italy)

UNDER THE PATRONAGE OF

SIGE, Società Italiana di Gastroenterologia

MTCC, Mediterranean Task Force for Cancer Control

PROBIOSTUDIO
ITALIAN ACADEMY FOR THE STUDY OF HUMAN MICROBIOTA

NUTRITION FOUNDATION OF ITALY

SINut
Società Italiana di Nutraceutica

AGUI

FISS
Fondazione Istituto Scienze della Salute

COLDIRETTI

THE PEDIATRIC DAY IS UNDER THE PATRONAGE OF

ESPGHAN

ESPGHAN, European Society for Paediatric Gastroenterology, Hepatology and Nutrition

INDEX

09.00-11.30 a.m. **JOINT MEETING SIGE & MTCC**
Chair: A. Montori (Italy)
Moderators: A. Gasbarrini (Italy), M. Crespi (Italy)

Role of alcohol on gut-microbiota
M. Antonelli (Italy)

Probiotics in peptic ulcer
Z. Sharaiha (Jordan)

Probiotics and liver diseases
A. N. El Zouki (Quatar)

Mucosal adhesion and anti-inflammatory effectes of Lactobacillus GG
C. Pagnini (Italy)

The role of Vitamin D in colorectal carcinogenesis
S. Manxhuka-Kerliu (Kosovo)

A functional tomato-based product for prostate cancer prevention
S. Iacobelli (Italy)

Gastrointestinal health, nutraceuticals and cancer
A. Saggioro (Italy)

11.30 a.m.-01.00 p.m. **LECTURES**
Chairs: B. Annibale (Italy), M. Del Piano (Italy)

Probiotics history
G. Gasbarrini (Italy)

Probiotics and diverticular disease: evidence based?
B. Annibale (Italy)

The emerging role of gut microbiota in autism pathogenesis: a new hope for effective prevention and treatment
E. Grossi (Italy)

Probiotics for Africa: a progress report
L. Mogna (Italy)

01.00-02.00 p.m. **Lunch**

02.00-03.30 p.m. **OPENING CEREMONY**
L. Capurso (Italy)
R. Marabelli - Ministero della Salute (Italy)
C. Lambert - IPA Europe
V. Savarino - SIGE (Italy)
A. Guarino - ESPGHAN

03.30-04.00 p.m. **OPENING LECTURE**
Chair: B. Scarpa (Italy)

A system view on microbiota and health
B. van Ommen (The Netherlands)

04.00-06.00 p.m. **GUT MICROBIOTA**
Chairs: F. Guarner (Spain), J. Dorè (France)

Clinical relevance of enterotypes
J. Dorè (France)

Integrated meta-omic profiling to unveil microbiota patterns
L. Putignani (Italy)

Quest for causality: the case of Akkermansia
C. Belzer (The Netherlands)

Celiac disease and gut microbiota
Y. Sanz (Spain)

Gut microbiota and obesity
A. M. Castellazzi (Italy)

06.00-07.30 p.m. **GUT MICROBIOTA, ANTIBIOTICS AND PROBIOTICS**
Chairs: A. Gasbarrini (Italy), G. Ippolito (Italy)

Introduction
G. Ippolito (Italy)

Gut microbiota and antibiotics
C. Scarpignato (Italy)

Gut microbiota diabetes and insulin resistance
A. Everard (Belgium)

Gut microbiota antimicrobials and obesity
E. Murphy (Ireland)

Fecal trasplant
A. Gasbarrini (Italy)

WELCOME COCKTAIL

SIGE-GUT MICROBIOTA STUDY GROUP UPTODATE MEETING
Coordinators: A. Gasbarrini (Italy), G. Capurso (Italy)

03.00-04.00 p.m.

SESSION 1
GUT MICROBIOTA COMPOSITION
Moderators and discussants: M. Cicala (Italy), D. Festi (Italy)

Bacteriome
V. Iebba (Italy)

Virome
S. Petta (Italy)

Mycome
L. Putignani (Italy)

04.00-05.00 p.m.

SESSION 2
GI RELATED DISORDERS
Moderators and discussants: C. Ciacci (Italy), L. Biancone (Italy)

Celiac disease
G. Losurdo (Italy)

IBD
F. Zorzi (Italy)

Colon Cancer
C. Fazio (Italy)

05.00-06.00 p.m.

SESSION 3
LIVER AND PANCREAS
Moderators and discussants: G. Delle Fave (Italy), D. Alvaro (Italy)

Pancreas
M. Signoretti (Italy)

Liver disease
F. Ponziani (Italy)

Biliary tract
M. C. Bragazzi (Italy)

06.00-07.00 p.m.

SESSION 4
NOVELTY ON MICROBIOTA MODULATION
Moderators and discussants: G. Cammarota (Italy), E. Corazziari (Italy)

Rifaximin
F. Ponziani (Italy)

Inulin
L. Laterza (Italy)

Microbial Transplantation
G. Ianiro (Italy)

08.30-10.30 a.m.

NEW FOODS

Chair: V. Fogliano (The Netherlands)

Discrete chemical and physical dietary fiber structures and their potential role in favoring gut bacteria
B. R. Hamaker (USA)

An advanced *in vitro* technology platform to study the mechanism of action of pre- and probiotics in the gastrointestinal tract
M. Marzorati (Belgium)

Functional food from broccoli: the glucosinolate story
R. Verkerk (The Netherlands)

Bitter taste and satiety: a new concept to design effective food components
P. Vitaglione (Italy)

Functional food activating PPAR gamma in the treatment of lactose intolerance
P. Desreumaux (France)

Novel food formula suitable for 3D printing
C. Severini (Italy)

10.30 a.m.-12.30 p.m.

PREBIOTIC MICROBIOTA MODULATION FOR IMPROVED HUMAN HEALTH

Chair: K. M. Tuohy (Italy)

Ageing,immunity and influence of the gut microbiota
P. Yaqoob (UK)

Modulation of the gut-brain axis with prebiotics for improved brain function
P. W. J. Burnet (UK)

How prebiotics help the gut microbiota to modulate liver and adipose tissue metabolism
N. Delzenne (Belgium)

Prebiotic microbiota modulation reducing the risk of metabolic syndrome
F. Fava (Italy)

The role of prebiotic milk oligosaccharides in host microbial interactions
S. Ross (Ireland)

Ketogenic diet and microbiota
A. Tagliabue (Italy)

12.30-01.30 p.m. **LECTURES**
Chairs: G. Torre (Italy), M. Koch (Italy)

Mediterranean Diet and Gut Microbiota
E. Roda (Italy)

Vitamin D and gut microbiota. Immune and anti-tumoral activity
M. L. Brandi (Italy)

The role of vitamin D in allergic disease in children
M. Miraglia del Giudice (Italy)

01.30-02.00 p.m. **Lunch**

02.00-03.00 p.m. **LACTOBACILLUS GG IN CLINICAL PRACTICE**
Chair: L. Capurso (Italy)

The epigenetic effects of LGG in children with food allergy
R. Berni Canani

The use of Lactobacillus rhamnosus GG in Pediatrics: evidence from the literature
S. Cucchiara

The role of scientific evidence in the choice of probiotics: the LGG Case
A. Gasbarrini

03.00-04.30 p.m. **MICROBIOTA IMMUNE SYSTEM AND BILE ACIDS**
Chairs: M. Rescigno (Italy), P. Nisticò (Italy)

Role of immune cells in microbiota handling
K. McCoy (Switzerland)

Microbiota and bile acids: the gut-liver axis
A. Moschetta (Italy)

Microbiota and barrier defence
M. Rescigno (Italy)

04.30-06.00 p.m. **MICROBIOME, DIET AND CO-EVOLUTION**
Chair: P. Brigidi (Italy)

Gut microbiome of the Hadza hunter-gatherer
A. G. Henry (Germany)

Metagenome sequencing of the hunter-gatherer gut microbiota
M. Candela (Italy)

The effect of diet globalization on gut microbiota
C. De Filippo (Italy)

Characterization of microbiota of non-western populations
D. Cavalieri (Italy)

06.00-07.30 p.m. **MICROBIOTA AND FUNCTIONAL GASTROINTESTINAL DISORDERS**
Chairs: G. Barbara (Italy), V. Stanghellini (Italy)

Introduction
V. Stanghellini (Italy)

Microbiota-brain axis from animal models to patients
S. M. Collins (Canada)

Microbiota epithelial interactions relevance for IBS
A. Gasbarrini (Italy)

Probiotics and FGID
F. Guarner (Spain)

Concluding remarks
G. Barbara (Italy)

09.00-10.00 a.m. **MICROBIOTA AND SKIN**
Chairs: M. Picardo (Italy), A. Cristaudo (Italy)

Microbioma skin gut axis
L. Drago (Italy)

Skin microbioma and acne
M. Ottaviani (Italy)

Skin microbioma and atopic deramtitis
A. Cristaudo (Italy)

10.00-11.00 a.m. **LECTURES**
Chairs: M. Anti (Italy), P.G. Natali (Italy)

Gut microbiota and liver
M. Koch (Italy)

Gut microbiota and cirrhosis: role of probiotics
R. K. Dhiman (India)

Laparoscopic Bariatric Surgery: Evidence and Unmet Needs
P. Gentileschi (Italy)

11.00 a.m.-01.00 p.m. **VAGINAL MICROBIOTA AND WOMAN'S HEALTH**
Chiars: R. Di Iorio (Italy), F. Facchinetti (Italy)

Vaginal microbiota and woman's age
F. De Seta (Italy)

Genes and nutrition in metabolic syndrome
C. Zadro (Italy)

Microbiota changes in obese women
F. Facchinetti (Italy)

Prevention of maternogenic preeclampsia by high dose multiple strains probiotics supplementation
E. Ferrazzi (Italy)

Probiotics in the treatment of Candida vulvo-vaginitis and bacterial vaginosis
F. Vicariotto (Italy)

PEDIATRIC DAY

9.00-10.30 a.m **NASH AND OBESITY**
Chair: B. Koletzko (Germany)

Dysbiosis and pathophysiology
E. Isolauri (Finland)

Clinical data in children (RCT and metanalysis)
V. Nobili (Italy)

Indications and recommendations by societies and institutions
U. Baumann (Germany)

Developments: where are we, what needs to be done
B. Koletzko (Germany)

10.30-11.00 a.m. **Coffee break**

11.00 a.m.-12.30 p.m. **FOOD ALLERGY**
Chair: J. Vanderhoof (USA)

Dysbiosis and pathophysiology
R. Berni Canani (Italy)

Clinical data in children (RCT and metanalysis)
A. Fiocchi (Italy)

Indications and recommendations by societies and institutions
S. Koletzko (Germany)

12.30-01.00 p.m. **LECTURE**
The use of probiotics in necrotizing enterocolitis
W. Mihatsch (Germany)

01.00-02.00 p.m. **Lunch**

02.00-04.00 p.m. **FUNCTIONAL INTESTINAL DISORDERS**
Chair: Y. Vandenplas (Belgium)

Dysbiosis and pathophysiology
G. Barbara (Italy)

Clinical data in children (RCT and metanalysis)
- Coliky infants
  H. Szajewska (Poland)
- IBS
  A. Staiano (Italy)
- Constipation
  M. M. Tabbers (The Netherlands)

Indications and recommendations by societies and institutions
R. Francavilla (taly)

04.00-04.30 p.m. **Coffee break**

04.30-05.00 p.m. Interactive session and presentation of the ESPGHAN algorithms
Y. Vandenplas (Belgium)

05.00-06.00 p.m. **POSTER SESSION OR NEW STUDIES: A BRIEF SESSION TO PRESENT AND DISCUSS NEW DATA**
PROPOSALS NEEDED

08.30-10.30 a.m. **GUT MICROBIOTA AND IBD**
Chair: R. Caprilli (Italy)
Moderators: F. Pallone (Italy), M. Fantini (Italy)

The good and the bad guys of the intestinal microbiota
H. Sokol (France)

Western diet and IBD susceptibility
N. Barnich (France)

Instability of the gut microbiota in IBD
F. Guarner (Spain)

Use of food-grade bacteria recombinant for protease inhibitor to treat intestinal inflammation
N. Vergnolle (France)

Fecal transplant in UC
C. Y. Ponsioen (The Netherlands)

10.30-11.30 a.m. **LECTURES**
Chair: G. Delle Fave (Italy)

Redox regulation of gut, microbiota interactions
G. Rotilio (Italy)

B. clausii in immunity: evidences from preclinical to clinical
L. Morelli (Italy)

Radiotheray and Gut microbiota
G. Arcangeli (Italy)

11.30 a.m.-01.00 p.m. **NUTRITION AND CANCER**
Chair: P. Marchetti (Italy)

Gut microbioma and gastrointestinal cancer: les liasions dangereuses
N. Tozun (Turkey)

Nutritional derivatives and cancer prevention
A. Albini (Italy)

Role of nutrition in cancer treatment
D. Rasio (Italy)

ORAL COMMUNICATION

08.30-10.00 a.m

PROBIOTICS 1

Moderator: C. Severi (Italy)

OC. 1 - BIFIDOBACTERIUM ANIMALIS SUBSP LACTIS CNCM-I2494 RESTORES TIGHT JUNCTION PROTEINS LEVELS IN A CHRONIC LOW-GRADE COLONIC INFLAMMATION MOUSE MODEL

Rebeca Martin [1], Laure Laval [1], Florian Chain [1], Sylvie Miquel [1], Jane M Natividad [1], Claire Cherbuy [1], Harry Sokol [1], Elena F Verdu [2], Johan van Hylckama Vlieg [3], Luis G Bermudez-Humaran [1] -Tamara Smokvina [3], Philippe Langella [1]

[1] INRA, MICALIS INSTITUTE, Jouy en Josas, France
[2] Farcombe Digestive Disease Institute, McMaster University, Hamilton, Canada
[3] Danone Nutricia Research, Danone Nutricia Research, Palaiseau, France

OC. 2 - INTESTINAL MICROBIOTA IS INVOLVED IN GENETIC INSTABILITY, INFLAMMATION, LONGEVITY AND LATENCY OF LYMPHOMA IN ATM DEFICIENT MICE.

Robert Schiestl [1]

[1] Departments of Pathology, Environmental Health Sciences and Radiation Oncology, UCLA, Los Angeles, United States

OC. 3 - A DUAL-ENVIRONMENT CO-CULTURE SYSTEM TO BETTER EVALUATE EFFECTS OF FOOD INGREDIENTS ON INTESTINAL BARRIER INTEGRITY IN PHYSIOLOGICALLY RELEVANT CONDITIONS

Rachel Anderson [1], Nicole Roy [1]

[1] Food Nutrition & Health Team, AgResearch, Palmerston North, New Zealand

OC. 5 - DISCOVERY OF A CONJUGATIVE MEGAPLASMID IN BIFIDOBACTERIUM BREVE

Francesca Bottacini [1], Mary O'Connell Motherway [1], Eoghan Casey [1], Brian McDonnell [1], Jennifer Mahony [1], Marco Ventura [2], Douwe van Sinderen [1]

[2] University College Cork, University, Cork, Ireland [1], University of Parma, University, Parma, Italy

OC. 6 - EXPOSURE OF LACTOBACILLUS ACIDOPHILUS AND LACTOBACILLUS CASEI TO 2.4 GHZ ELECTROMAGNETIC RADIOFREQUENCY RADIATION ENHANCES THE GROWTH OF THESE PROBIOTIC BACTERIA

S Amanat [1], SMJ Mortazavi [2], F Shekoohi-Shooli [3], SM Mazloomi [1], F Sadeghi [3], S Nematollahi [4], M Haghani [3]

[1] Nutrition and Food Sciences Research Center, School of Nutrition and Food Sciences, Shiraz University of Medical Sciences, Shiraz, Iran, Shiraz University of Medical Sciences, Shiraz, Iran
[2] Ionizing and Non-ionizing Radiation Protection Research Center (INIRPRC), Shiraz University of Medical Sciences, Shiraz
[3] Ionizing and Non-ionizing Radiation Protection Research Center (INIRPRC), Shiraz University of Medical Sciences, Shiraz, Iran
[4] Biostatistics Department, Shiraz University of Medical Sciences, Shiraz, Iran

OC. 7 - ROTECTIVE ACTIVITY OF LACTOBACILLUS RHAMNOSUS GG-DERIVED FACTORS ON PATHOGEN LIPOPOLYSACCHARIDE (LPS)-INDUCED DAMAGE OF HUMAN COLONIC SMOOTH MUSCLE CELLS

Alessia Cicenia [1], Floriana Santangelo [2], Loredana Gambardella [3], Valerio Iebba [2], Annunziata Scirocco [1], Massimo Marignani [4], Piero Chirletti [5], Lucia Pallotta [1], Marilia Carabotti [1], Enrico Corazziari [1], Serena Schippa [2], Carola Severi [1]
[1] Department of Internal Medicine and Medical Specialties, Sapienza University, Rome, Italy
[2] Department of Public Health and Infectious Diseases, Sapienza University, Rome, Italy
[3] Department of Medicine, Istituto Superiore di Sanità, Rome, Italy
[4] UOC Diseases of the digestive system and liver (S.Andrea Hospital), Sapienza University, Rome, Italy
[5] Department of Surgery, ''F. Durante'', Sapienza University, Rome, Italy

OC. 8 - PHYSICIAN PERCEPTIONS ON PROBIOTICS: RESULTS OF A MULTINATIONAL SURVEY

Christian Boggio Marzet [1], Annalisa Passariello [2], Roberto Berni Canani [2], Andras Arato [3], Serhat Bor [4], Ener Dinleyici [5], Uday Ghoshal [6], Francisco Guarner [7], Aldo Maruy [8], Ettair Said [9], Sohail Thobani [10], Lin Zhang [11]
[1] Pediatric Gastroenterology & Nutrition Section, Hospital Gral. de Agudos "Dr. I.Pirovano", CABA, Argentina
[2] Department of Traslational Medical Science, University of Naples Federico II, Naples, Italy
[3] Pediatric Gastroenterology, Semmelweis University, Budapest, Hungary
[4] Tıp Fakültesi Gastroenteroloji Kliniği, Ege Üniversitesi, Izmir, Turkey
[5] Department of Pediatrics, Eskisehir Osmangazi University, Eskisehir, Turkey
[6] Department of Gastroenterology, S.G.P.G.I, Lucknow, India
[7] Digestive System Research Unit, Vall d'Hebron Research Institute, Barcelona, Spain
[8] Gastroenterología Pediátrica, Hospital Nacional Cayetano Heredia, Lima, Peru
[9] Department of Pediatrics, Rabat University, Rabat, Morocco
[10] Department of Pediatric Gastroenterology, South City Hospital, Karachi, Pakistan
[11] Department of Pediatrics, 3rd Hospital of Hebei Medical University, Hebei, China

OC. 9 - THE ACTION OF DIFFERENT PROBIOTICS IN CORRECTING ACTIVITY OF INTESTINAL ENZYMES IN RATS AFTER ADMINISTRATION OF ANTIBACTERIAL AGENTS

Lyudmila Gromova [1], Elena Ermolenko [2], Yulia Dmitrieva [1], Anna Alekseeva [1], Yuri Borschev [2], Andrei Gruzdkov [1], Alexander Suvorov [2]
[1] I. P. Pavlov Institute of Physiology, RAS, St. Petersburg, Russian Federation
[2] Institute of Experimental Medicine, RAS, St. Petersburg, Russian Federation

10.00-11.30 a.m

PROBIOTICS 2

OC. 10 - IMMUNOMODULATORY IN VITRO AND IN VIVO EFFECTS OF LACTOBACILLUS RHAMNOSUS AND ELDERBERRY EXTRACT ALONE AND IN COMBINATION

Stephan Maurel [1], Christine Libon [2], Sandrine Pourtau [2], Claire Issac [2], Laila Haddioui [3], Christophe Ripoll [1]
[1] Naturactive, Laboratoires Pierre Fabre, Castres, France
[2] Pierre Fabre Research Institute, Pierre Fabre R&D Center, Toulouse, France
[3] Fonderephar, Toulouse, France

OC. 11 - FEATURES OF THE PROBIOTIC ENTEROCOCCI INFLUENCE ON THE IMMUNE SYSTEM IN EXPERIMENTAL MODELS OF MULTIPLE SCLEROSIS AND INTESTINAL DYSBIOSIS

Elena Ermolenko [1], Irina Abdurasulova [1], Elena Tarasova [1], Galina Leontieva [1], Marina Kotyleva [1], Tatyana Kramskaya [1], Igor Kudryavtsev [1], Alexander Suvorov [1]
[1] Institute of Experimental medicine, University, Saint Petersburg, Russian Federation

OC. 12 - STUDIES ON THE IDENTIFICATION OF BIFIDOBACTERIA ISOLATED FROM HUMAN BREAST MILK OF INDIAN WOMEN

Shiva Prakash Myakala [1], Madhavi G [1], Nishanth Kumar S [1], Chathyushya K B [1], Sumalata G [1], Hemalatha R [1]
[1] *National Institute of Nutrition, Indian Council of Medical Research, Hyderabad, India*

OC. 13 - ELECTRON MICROSCOPIC INVESTIGATION OF PROBIOTIC BACTERIA INFLUENCE ON RAT INTESTINE MUCOSA IN DYSBIOSIS EXPERIMENTAL MODEL

Oksana Rybalchenko [1], Elena Ermolenko [2], Olga Orlova [1], Alexander Suvorov [2]
[1] *St. Petersburg State University, University, Saint Petersburg, Russian Federation*
[2] *Institute of experimental medicine, University, Saint Petersburg, Russian Federation*

OC. 14 - ANTI-OBESITY POTENTIAL OF LACTOBACILLUS SALIVARIUS LPLM-01 IN A MURINE MODEL OF DIET-INDUCED OBESITY

Erica Castro [1], Joaquín Rojas-Fritz [2], Juan Pablo Mellado [3], María José Aguayo [3], Karen Pardo [3], Pamela Contreras [3], Sebastián Martínez [4], Margarita González [2], Rodrigo Bórquez [4], Jaime Cofré [3], Daniel Durán-Sandoval [2]
[1] *Faculty of Medicine, St. Sebastian University, Concepción, Chile*
[2] *Department of Clinical Biochemistry and Immunology, Faculty of Pharmacy., University of Concepción, Concepción, Chile*
[3] *Laboratory of Lactic Bacteria, University of Concepcion, Concepción, Chile*
[4] *Department of Chemical Engineering, Faculty of Engineering, University of Concepción, Concepción, Chile*

OC. 15 - EFFICACY OF PROBIOTICS IN PATIENTS WITH LACTOSE INTOLERANCE, A PRELIMINARY STUDY

Rachel Gingold-Belfer [1], Tsachi Tsadok Perets [1], Einav Shporn [1], Ido Blechman [1], Sigal Levi [2], Lea Pakanaev [1], Yaron Niv [1], Ram Dickman [1]
[1] *Gastroenterolgoy Department, Rabin medical Center, Petach Tikva, Israel*
[2] *Statistics Department, The academic College of Tel Aviv Jaffa, Tel Aviv, Israel*

OC. 16 - RESTORE AND MAINTAINING OF HUMAN GUT MICROBIOTA DURING THE ANTIBACTERIAL THERAPY

Svetlana Zakirova [1], Anastasia Koval [2]
[1] *Lomonosov Moscow State University, Lomonosov Moscow State University, Moscow, Russian Federation*
[2] *Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, Moscow, Russian Federation*

OC. 17 - THE EVALUATION OF EMULSION TECHNIQUE FOR MICROENCAPSULATION OF LACTOBACILLUS PLANTARUM WITH ALGINATE-RESISTANT STARCH CAPSULES

Yahya Shafiei [1]
[1] *Department of Food Science and Technology, Khoy Branch, Islamic Azad University, Khoy, Iran*

OC. 18 - ANTIVIRAL ACTIVITY OF DIFERENT PROBIOTIC STRAINS IN VERO CELL LINE

Konstantin Ermolenko [1], Alexander Colobov [2], Anna Zakrevskaya [1], Lydia Kulyashova [1], Yulia Desheva [3], Elena Ermolenko [3]
[1] *Saint-Petersburg Pasteur Institute, University, Saint Petersburg, Russian Federation Institute of highly pure biopreparations, University, Saint Petersburg, Russian Federation*
[2] *Federal State Budgetary Scientific Institution "Institute of Experimental Medicine", University, Saint Petersburg, Russian Federation* [3]

OC. 19 - PROBIOTICS IMPROVE THE IRON ABSORPTION FROM A MEAL

Gunilla Önning [1], Michael Hoppe [2], Malin Björklund [3], Niklas Larsson [3], Gun-Britt Fransson [3], Lena Hulthén [2]
[1] Pure and Applied Biochemistry and Probi AB, Lund University, Lund, Sweden
[2] Department of Internal Medicine and Clinical Nutrition, Sahlgrenska Academy at the University of Gothenburg, Gothenburg, Sweden
[3] Probi AB, -, Lund, Sweden

OC. 20 - AGING-RELATED CHANGES OF GUT MICROBIOTA COMPOSITION FROM NEW-BORN TO CENTENARIAN, CROSS-SECTIONAL STUDY

Toshitaka Odamaki [1],Kumiko Kato [1], Hirosuke Sugahara [1], Nanami Hashikura [1], Sachiko Takahashi [2], Jin-zhong Xiao [1], Fumiaki Abe [2], Ro Osawa [3]
[1] Next Generation Science Institute, Morinagamilk Industry, Zama, Japan
[2] Food Ingredients & Technology Institute, Morinagamilk Industry, Zama, Japan
[3] Department of Bioresource Science, Graduate School of Agricultural Science, Kobe University, Kobe, Japan

11.30a.m.-01.00 p.m.

NEW FOODS

Moderetor: K. M. Tuohy

OC. 21 - DESIGN OF EXPERIMENT APPROACH FOR DEVELOPMENT OF OAT BASED FOOD PRODUCT FORTIFIED WITH PREBIOTIC (HONEY) AS POTENTIAL PROBIOTIC VEHICLE

Bijender Kumar [1], Mahak Gupta [1]
[1] University of Jammu, School of Biotechnology University of Jammu, Jammu, India

OC. 22 - CHOLESTEROL CONTENT OF LIGHVAN CHEESE: A NATURAL PROBIOTIC TRADITIONAL CHEESE

Morad Bahar [1], Ainaz Alizadeh [2]
[2] Faculty of veterinary medicine, Tabriz Branch, Islamic Azad University, Tabriz, Iran
[1] Department of Food Science and Technology, Tabriz Branch, Islamic Azad University, Tabriz, Iran

OC. 23 - THE USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IS FREQUENT IN PATIENTS WITH PANCREATIC DISORDERS

Serena Stigliano [1], Matteo Piciucchi [1], Livia Archibugi [1], Giulia Zerboni [1], Gianfranco Delle Fave [1], Gabriele Capurso [1]
[1] La Sapienza University, sant'Andrea Hospital, rome, Italy

OC. 24 - CHEMICAL CHARACTERISTICS AND SURVIVAL OF PROBIOTICS IN CHEDDAR CHEESE FORTIFIED WITH PHENOLIC COMPOUNDS OF MANGO (MANGIFERA INDICA L.) KERNEL OIL

Muhammad Nadeem [1]
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OC. 25 - THE PERSPECTIVE USE OF NOVEL STRAINS LACTOCOCCUS LACTIS SSP. LACTIS FOR FOOD

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OC. 26 - PHYSICOCHEMICAL PROPERTIES OF FUNCTIONAL SCAMORZA CHEESE FROM OVINE MILK

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OC. 27 - EFFECT OF HYDROPINIC TREATMENT WITH CALCIUM BICARBONATE WATER PLUS L. REUTERI ON OROCAECAL TRANSIT IN PATIENTS SUFFERING FROM CHRONIC CONSTIPATION

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OC. 28 - EFFECT OF HYDROPINIC TREATMENT WITH CALCIUM CARBONATE WATER PLUS L. REUTERI ON GASTRIC EMPTYING IN DYSPEPSIA

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OC. 29 - DOES PARTIALLY HYDROLYSED GUAR GUM HAVE A ROLE TO PLAY IN THE TREATMENT OF IRRITABLE BOWEL SYNDROME: A SYSTEMATIC REVIEW

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ORAL PRESENTATION

EFFECT OF HYDROPINIC TREATMENT WITH CALCIUM BICARBONATE WATER PLUS L. REUTERI ON OROCAECAL TRANSIT IN PATIENTS SUFFERING FROM CHRONIC CONSTIPATION

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Introduction and Aim

Constipation is a common ailment in clinical practice, can sometimes be a clinical symptom of different organic diseases, but it often presents as a stand-alone problem that is not associated with any other pathology. Our study aims to evaluate intestinal transit time in patients suffering from chronic constipation after the administration of calcium bicarbonate water (Uliveto) based fluid associated to L. reuteri.

Methods

15 patients suffering from chronic constipation (average age: 41±5, 5 female and 5 male) and 15 healthy controls (average age: 40±7, 5 females and 5 males) were enrolled and were subjected to a lactulose breath test to determine orocaecal transit time. The study participants therefore began to assume a supplementation with 1,5 litres daily of calcium bicarbonate (fixed residue at 180 °C = 860 mg/l, bicarbonate HCO3- = 650mg/l, calcium Ca++ = 169 mg/l) water (Uliveto water) and L. reuteri (in form of tablets, at a dose of 108 CFU, twice daily) for 15 days. At the end of the hydropinic therapy, the patients were re-assessed by repeating the lactulose breath test and once again completing the questionnaire on gastrointestinal symptoms.

Results

Intestinal transit time was statistically slower in patients suffering from chronic constipation as compared with controls. All patients showed an alteration to orocaecal transit time. After 15 days therapy with the water supplementation plus L. reuteri, a statistically significant overall increase was seen in the orocaecal transit time in all patients.

Conclusion

After this we may affirm that supplementation with Uliveto water and L. reuterii resulted in improved intestinal transit time in patients suffering from chronic constipation. Further studies are necessary to established if this effect is linked to the supplementation with Uliveto water or L. reuterii or to the combination of both.

EFFECT OF HYDROPINIC TREATMENT WITH CALCIUM CARBONATE WATER PLUS L. REUTERI ON GASTRIC EMPTYING IN DYSPEPSIA

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Introduction and Aim

Dyspeptic syndrome has always been a health problem of great interest due to the fact that it is so widespread. This interest has then become even greater in recent years, due to the increase in pharmaceutical expenditure. In a significant percentage of dyspeptics, slowed gastric emptying underlies the symptoms. Treatments based on acid secretion inhibitors and prokinetics are often inefficient in actually eliminating or reducing symptoms. Hydropinic treatments based on thermal waters are often recommended and prescribed for this type of pathology. This study therefore aimed to assess the effect, after the administration of *calcium bicarbonate water (Uliveto)* based fluid associated to *L. reuteri*, on the gastric emptying of solids and on symptoms reported by a group of patients suffering from functional (non-organic) dyspepsia.

Methods

20 patients suffering from primary dyspepsia and 10 healthy (non-dyspeptic) controls were studied. All subjects were subjected to assume a supplementation with 1,5 litres daily of calcium bicarbonate (fixed residue at 180 °C = 860 mg/l, bicarbonate HCO3- = 650mg/l, calcium Ca++ = 169 mg/l) water (Uliveto water) and L. reuteri (in form of tablets, at a dose of 108 CFU, twice daily) for 10 days. Before and after the supplementation period, each subject involved in the study was subjected to a gastric emptying assessment by means of a '13c-octanoic acid breath test'. A clinical score was also used to assess changes seen in symptoms.

Results

In terms of mean +/- standard deviation results, dyspeptic subjects showed a clear improvement in emptying parameters (T1/2 and Tlag) after treatment, in addition to a reduction of average symptom scores.

Conclusion

Thermal treatment based on oligomineral water plus probiotic L. reuteri would appear to improve emptying of solids in dyspeptic patients. Medium – long term longitudinal studies were required to verify the persistence of this effect.

BIFIDOBACTERIUM ANIMALIS SUBSP LACTIS CNCM-I2494 RESTORES TIGHT JUNCTION PROTEINS LEVELS IN A CHRONIC LOW-GRADE COLONIC INFLAMMATION MOUSE MODEL

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Objective

Evidence has grown to support the effectiveness of probiotic strains in the management of gastrointestinal alterations which are mainly associated with deregulated barrier function. In particular, Bifidobacteria have been studied for their efficacy to prevent and to treat a broad spectrum of gut disorders. The aim of this work is to evaluate the effect of *Bifidobacterium animalis* subsp *lactis* CNCM-I2494 on intestinal barrier function

Methods

For this reason, we first achieve gut dysfunction using a DNBS-induced chronic low-grade inflammation model in mice. Then, markers of inflammation, barrier permeability and immune function were monitored.

Results

All the parameters pointed out the absence of an active inflammation process validating the model as a low-grade inflammation one. Nevertheless, barrier permeability, lymphocytes populations and colonic cytokines were found to be altered in challenged mice. CNCM-I2494 was able to restore the function of the intestinal barrier reducing intestinal permeability and to restore colonic goblet cell populations and cytokine levels. Furthermore, tight junction (TJ) protein levels were measured by qRT-PCR showing the ability of the studied strain to specifically normalize their level, especially evident for claudin-4 protein. Finally, CNCM-I2494 counterbalanced CD4+ lymphocyte alterations in both spleen and mesenteric lymphoid nodes (MLN) being able to restore the Th1/Th2 ratio altered by the DNBS challenge (which locally augments CD4+ Th1 cells) by increasing the Th2 response.

Conclusions

Taken together, these data suggest that *B. animalis* subsp lactis CNCM-I2494 can play an important role in restoring homeostatic level in disorders associated with low inflammation and increased colon permeability.

DESIGN OF EXPERIMENT APPROACH FOR DEVELOPMENT OF OAT BASED FOOD PRODUCT FORTIFIED WITH PREBIOTIC (HONEY) AS POTENTIAL PROBIOTIC VEHICLE

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Objective

Study aimed at isolation of proficient probiotics, their functional characterization, and application for development of oat-based fermented food product as potential probiotic-vehicle, using design of experiment (DOE) approach.

Methods

Tolerance of lactic acid bacteria (LAB) isolates under simulated gastrointestinal conditions was examined. Selected LAB were characterized for functional attributes like hydrophobicity, auto/co-aggregation, extracellular enzyme activity, antibacterial activity, antibiotic susceptibility etc.

Results

The LAB isolate M-13 (*Lactobacillus plantarum*) exhibited most of the functional properties of probiotics, and used for developing oat based fermented food product. Box-Behnken design-based optimized level of variables like concentration of oat, and honey, and incubation time, was 8.0%, w/v, 3.0 % w/v, and 48 h, respectively, that supported maximum growth of *L. plantarum* CFU/ml (15.98 CFU/ml). Among process variables incubation time was the most effective, and was followed by honey, and oat; interactive effect of honey and incubation time was maximum on growth of bacterium, and was followed by that of oat and honey, and oat and incubation time. In modified MRS (glucose replaced with probiotics like inulin, lactulose, fructooligosaccharides, or xylooligosaccharides) *L. plantarum* M-13 showed excellent growth. The probiotic-prebiotic (honey)-fortified food product developed was studied for shelf life at room temperature and under refrigeration.

Conclusions

L. plantarum M-13 may potentially be exploited as probiotic, and oat fortified with probiotic and probiotic (honey) could be a very healthy option.

INTESTINAL MICROBIOTA IS INVOLVED IN GENETIC INSTABILITY, INFLAMMATION, LONGEVITY AND LATENCY OF LYMPHOMA IN ATM DEFICIENT MICE

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Intestinal microbiota plays a role in nutrient metabolism, modulation of the immune system, arthritis, obesity and intestinal inflammation. When our lab moved from Harvard to UCLA we found a huge difference in genetic instability and longevity in Atm deficient mice. When we changed the intestinal microbiota back to conventional microbiota we could reproduce the phenotype at Harvard. We tested Atm deficient mice for genotoxicity, genetic instability, DNA damage, inflammation markers, cancer latency and longevity and high throughput sequencing of the intestinal microbiota. Isogenic mice from different housing facilities showed a four fold difference in life expectancy, a 4.5 fold difference in genetic instability and DNA damage. The onset of lymphomas was significantly 2.5 fold different. Metabolomics from the feces and urine showed bacterial metabolites with anticancer activity in the health beneficial microbiota. We sequenced the microbiota of both facilities and found Lactobacillus johnsonii 456 as dominant bacterial strain in the health beneficial microbiota.
Just this bacterium by itself reduced genotoxicity, reduced inflammation and reduced levels of cytotoxic T, NK and CD3 cells in the liver and blood. We also found similar differences in Trp53 deficient and even in wildtype mice. The underlying mechanisms is probably due to inflammation promotion or suppression mediated by the intestinal microbiota. The understanding of this effect may lead to a breakthrough in the understanding of the causes of carcinogenesis, which might lead to prevention of AT, a currently incurable progressive disease and possibly other cancer-prone DNA repair deficient diseases or even wildtype mice and people.

A DUAL-ENVIRONMENT CO-CULTURE SYSTEM TO BETTER EVALUATE EFFECTS OF FOOD INGREDIENTS ON INTESTINAL BARRIER INTEGRITY IN PHYSIOLOGICALLY RELEVANT CONDITIONS

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Objective

Appropriate intestinal barrier integrity is vital to prevent antigens and pathogens from entering the body and potentially causing disease. Conventionally, *in vitro* experiments to test the effects of food ingredients, including probiotic bacteria, on intestinal barrier integrity are carried out in an atmosphere of 5% CO2 in air because the human cell lines require oxygen. However, this does not accurately represent conditions in the human intestinal lumen, which contains limited oxygen in the small intestine and almost no oxygen in the large intestine. To overcome this limitation, we developed a novel dual-environment co-culture system where monolayers of epithelial cells receive oxygen from aerobic media in the basal compartment (below the cell layer, representing the underlying lamina propria), which is sealed off from the apical anaerobic environment of the workstation (above the cell layer, representing the intestinal lumen). We previously applied this system to study the interactions between a human obligate anaerobic bacterium, *Faecalibacterium prausnitzii*, and intestinal epithelial cells (*Cell Microbiol* 17:266-240).

Methods

The hypothesis of our current research was that anaerobic versus aerobic conditions alter physicochemical properties of food components (structure, charge, solubility) and this affects their interaction with intestinal cells. To test this we monitored the effect of three bovine milk proteins (purified casein, beta-lactoglobulin and lactoferrin) on the trans-epithelial electrical resistance (TEER) across epithelial cell layers (a measure of intestinal barrier integrity) in both conventional and apical anaerobic conditions over a 24 hour period.

Results

None of the three milk proteins altered TEER in conventional conditions, but all increased TEER (improved barrier integrity) compared to control medium in apical anaerobic conditions. This shows that the interactions between the milk proteins tested and host cells are different depending on the environment.

Conclusions

These data demonstrate that it is important to test the effects of food ingredients in more physiologically-relevant apical anaerobic conditions, in order to maximise the likelihood of successfully translating *in vitro* results into *in vivo* outcomes.

STUDIES ON THE IDENTIFICATION OF BIFIDOBACTERIA ISOLATED FROM HUMAN BREAST MILK OF INDIAN WOMEN

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Objective
This study was conducted to identify for the presence of Bifidobacteria in Human Breast Milk of Indian women.

Methods
A total of Thirty (30) breast milk samples of about 3-5 ml were collected asceptically from lactating women during the first week of delivery. They were subjected for screening of microflora by microbiological methods. We have observed mixed bacteria in these samples therefore we used a selective media supplemented with mupirocin (antibiotic). The colonies suspected for Bifido's were picked up for Gram's staining, Catalase and Fructose-6-phosphate phosphoketolase (F6 PPK) tests. The DNA was extracted from the identified Bifido's and subjected to PCR using genus and species specific primers. Subsequently the genome sequence analysis was carried out to know the variations and compared with already existing Bifidobacterium species available in databases viz. NCBI and GENBANK.

Results
The Bifido's identified as 'Y' and 'V' shaped in morphology were Gram positive and Catalase negative. The F6PPK test has shown the change in colour from yellow to dark brown indicating the genus Bifido which was further confirmed by PCR. The DNA sequencing results revealed that isolates from 6 samples out of 30 had 99% similarity and 4 were found to have 98 % with the existing *Bifidobacterium animalis* sub sps *lactis.*

Conclusion
We could conclude that human breast milk is a potential source for ***Bifidobacterium animalis*** **sub sps** ***lactis*** in Indian women. Since these are of human origin can easily colonize in human intestine and thus help in the treatment of various gastrointestinal diseases.

PHYSICIAN PERCEPTIONS ON PROBIOTICS: RESULTS OF A MULTINATIONAL SURVEY

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Objective
The objective of this study was to evaluate the knowledge, attitudes and current practices of physicians with regards to probiotics in 10 countries.

Methods
A closed-ended structured questionnaire was implemented in 10 different countries (Argentina, Peru, Spain, Italy, Hungary, Morocco, Turkey, Pakistan, India and China). Target and Sample Size: 90 to 190 physicians interviewed per country (General Practitioners-GP-, Pediatricians-P-, Gastroenterologists-G-). Total sample: 1670. Representativeness: adapted criteria according to each country's reality (quota method).

Results
85% doctors in 10 countries felt that they were somewhat or absolutely informed about probiotics, with the highest prevalence among G in China (100%) and GP in China (93%), India (91%). However 39% Moroccan physicians expressed a lack of information. Concerning probiotic definition 94% of Turkish doctors responded according to FAO/WHO criteria while in Pakistan only 39% of doctors did. Saccharomyces boulardii and Lactobacillus rhamnosus GG have been scientifically proven to work in acute infectious diarrhea and antibiotic associated diarrhea (46% and 30%) showing very different scores with no parallel with global guidelines. GPs are less aware of proofs on these strains in these indications whereas P remain the most aware target in the sample (36% boulardii/20% GG in GPs vs 51%/35% in P population). There is an international consensus on safety (84%) with no differences per target. Doctors do recommend probiotics to their family (82%) or themselves (68%). P recommend more frequently probiotics in acute diarrhea (in average 62,4 patients/100).

Conclusions
Most doctors feel well informed about probiotics.

CHOLESTEROL CONTENT OF LIGHVAN CHEESE: A NATURAL PROBIOTIC TRADITIONAL CHEESE

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Objective

Lighvan Cheese is a popular semi-hard cheese among Iranian consumers which is produced from raw sheep milk and ripened for three to five months. Presence of probiotics in this cheese is well documented. But concerns about cholesteol content of this cheese because of high fat content is considered by nutritionist and consumers. In this way, the study objective was to analyze the cholesterol content variation during the coagulation step and the ripening period.

Methods

The cholesterol content was analyzed by gas chromatography. In this way, unsaponifiable matter was was purified and accordingly injected without derivatization.

Results

Cholesterol in the initial milk was seperated in two phases during coagulation, one third in the whey and two third in coagulum. Average cholesterol content of cheese was 35 mg/100 gr chees. Regression analysis showed that the cholesterol changes during ripening was not significant ($p<0.05$), but the mean differences showed the least cholesterol content in the 3rd month.

Conclusions

The reduction in the third month of ripening could be explained by the ability of probiotics to absorb cholesterolwhich did not continue after bacterial lysis in the brine cotributing to cholesterol release. Cholesterol absorption was calculated as 42% of the initial content.The results indicates that Lighvan cheese should be ripened for three month to reach the least cholesterol content.

IMMUNOMODULATORY IN VITRO AND IN VIVO EFFECTS OF LACTOBACILLUS RHAMNOSUS AND ELDERBERRY EXTRACT ALONE AND IN COMBINATION

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Objective

Medicinal plants and probiotics have very high potential in immunomodulation. If numerous studies have investigated the effects of probiotics and plant extract alone in the immune response, the potential of their combination is less documented. As previously described, we selected an association between a probiotic strain and a plant extract, *Lactobacillus rhamnosus* GG and elderberry extract (EE), respectively, based on its ability to regulate cytokines expression involved in activation of immune cells. To complement our data, we examined the immunological properties of this association, both *in vitro* and *in vivo.*

Methods

Interleukin-8 (IL-8) production by HT-29 (human colorectal adenocarcinoma) cells was measured after incubation with *Lactobacillus rhamnosus* GG and/or EE.
BALB/c mice were vaccinated with Immugrip® and pre-treated with *Lactobacillus rhamnosus* GG in combination or not with EE. Vaccine-specific IgG response and secretory IgA were quantified by ELISA, in sera and in faeces, respectively.

Results

Lactobacillus rhamnosus GG and EE acts in a dose-dependent manner to decrease IL-8 production in HT-29 cells.
Pre-treatment of mice with *Lactobacillus rhamnosus* GG and EE enhanced the vaccine-specific IgG response and total IgA level in faeces when compared to non-treated mice.

Conclusions

These data confirm that the association between a probiotic and a plant extract presents immunomodulatory activities mainly through humoral immune response. Additionally, it modulates inflammatory response by decreasing IL-8 secretion. It is also noteworthy that *in vivo* effect on IgA secretion of the combination *Lactobacillus rhamnosus* GG and EE is stronger than the effects of *Lactobacillus rhamnosus* GG alone.

ELECTRON MICROSCOPIC INVESTIGATION OF PROBIOTIC BACTERIA INFLUENCE ON RAT INTESTINE MUCOSA IN DYSBIOSIS EXPERIMENTAL MODEL

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Objective

The aim of this study was to reveal the different influence of probiotic bacteria on ultrastructure of intestinal mucosa of rats with antibiotic associated dysbiosis.

Methods

Intestinal dysbiosis of male Wistar rats was induced by antibiotics. Probiotic bacteria *Lactobacillus rhamnosus* K32 (L), *Bifidobacterium longum* GT15 (B), *Enterococcus faecium* L3 (E) were introduced intragastrically for 5 days. Rats from the control group C1 did not receive probiotics. Animals from control group C2 did not receive antibiotics and probiotics. Intestinal mucosa ultrastructure was studied on ultrathin sections.

Results

The signs of slight inflammation were reveled in all the samples of mucosa except the C2 group. The recovery of the intestinal mucosa was determined only after consumption of probiotics. In group C1 a lot of microvilli on the surface of epithelial cells and the tight junctions were destroyed. Intercellular space was increased. Epithelial cells in groups C2, E and B were in a physiologically active state. The highest number of bacteria were on the mucosal surface in group C1. Bacteria were in intestinal lumen of group E, but their number was smaller than in C1. Bacteria in group E were separated from epithelial cells by layer of mucus. In group E there were many goblet cells. A large number of ribosomes were observed in epithelial cells in group C1.

Conclusions

The most significant violation of the microflora of the large intestine observed in children Ultrastructural changes in the intestinal mucosa after the correction of dysbiosis with probiotics depended on the kind of probiotic used.

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FEATURES OF THE PROBIOTIC ENTEROCOCCI INFLUENCE ON THE IMMUNE SYSTEM IN EXPERIMENTAL MODELS OF MULTIPLE SCLEROSIS AND INTESTINAL DYSBIOSIS

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Objective

Comparison of probiotic enterococci effect on microbiota and immunity of rats with experimental antibiotic-associated intestinal dysbiosis (EAID) and autoimmune encephalomyelitis (EAE).

Methods

EAID was induced by ampicillin® and metronidazole® (AM). EAE was obtained after injection of spinal cord homogenate (SCH). Enterococcus faecium L3 were introduced introgastrically 5 (EAID) or 14 (EAE) days. Gut microbiota were studied bacteriologically, by RT-PCR and metagenome analysis. Control groups of animal received PBS (C1), only antibiotics (C2) or SCH (C3). Populations of lymphocyte and cytokines in blood were analyzed using Flow Cytometry and ELISA.

Results

Intestinal dysbiosis signs were similar after introduction AM and SCH. The number of opportunisctic bacteria was increased, the content of lactobacilli, enterococci, bifidobacteria and faecalibacteria was reduced. Probiotic introduction led to the microbiocenosis recovery, disappearing of dysbiosis symptoms and EAE severity attenuation. It was accompanied by elevation of CD3+CD4+CD25+ cells during the latent period of EAE (7^{th} day) and after correction of EAID. The number of CD3+CD8+ T cells on the peak of clinical manifestations in EAE (14^{th}. day) was increased. The content of TGF-β (7^{th} day) and IL-10 (14^{th} day) were increased respectively due to EAE therapy. Elevation of concentration both cytokines was revealed after correction of EAID.

Conclusions

Despite the differences of the causes of dysbiosis, the changes of the microbiota composition can be similar after consumption of probiotic E. faecium L3. Immune response after exposure probiotic depends on the organism condition. It is necessary to consider the possibility of multi-directional action of probiotics on immunity.

ANTIVIRAL ACTIVITY OF DIFERENT PROBIOTIC STRAINS IN VERO CELL LINE

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Objective

The aim of the study was to evaluate the effects of probiotic strains metabolites on the reproduction of herpes simplex virus type-1 (HSV1).

Methods

Vero cells were infected with HSV1 and then incubated with supernatants of probiotic strains *Lactobacillus plantarum 8A-P3* and *Enterococcus faecium-L3* (EntA+EntB+ EntXa+EntXb+) applied in serial dilutions, with chemically synthesized peptides EntB and EntXb. Peptides were synthesized in situ by the solid-phase method with an "Applied biosystems 430A" synthesizer. They were added to the HSV1 60 minutes before incubation in concentrations 5 - 50 mcg/ml and then incubated in tissue culture. Acyclovir (Lek, Slovenia) 25 mcg/ml was used as antiviral drug control. Cytopathic effect of the virus was determined by light or immunoflourescence microscopy with serum containing antibodies to HSV1 after 48h incubation.

Results

HSV-1 alone caused the most profound cytopathic effect (100% cells). Addition of acyclovir reduced cytopathic effect for 50%. Supernatants obtained from *L.plantarum*, and *E.faecium* generated dose dependent effect from 60 to 37% of viral inhibition. *E.faecium* strain L-3 extract was 25% more active than *L.plantarum*. Extract from the strain L-3 contained demonstrated 80% antiviral activity against HSV1 in Vero cells as well as EntB and EntXb. These peptides inhibited the virus reproduction in dose dependent manner. Introduction of enterocins even in a minimum dilution reduced HSV1 cytopathic effect by 20%

Conclusions

Extracts of several probiotic bacterial strains express a specific activity against reproduction of HSV-1 *in vitro. Enterococcus faecium-L3* enterocins provide antiviral effects on HSV1 comparable to the effect of antiviral chemotherapy.

DOES PARTIALLY HYDROLYSED GUAR GUM HAVE A ROLE TO PLAY IN THE TREATMENT OF IRRITABLE BOWEL SYNDROME: A SYSTEMATIC REVIEW

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Objective

Irritable bowel syndrome (IBS) is a functional bowel disorder characterised by abdominal discomfort or pain that is associated with a change in bowel habit. It is one of the most common gastrointestinal disorders worldwide. Management has thus far proven challenging. Partially hydrolysed guar gum (PHGG) is a soluble fibre that demonstrates beneficial microbiota-modifying properties. Preliminary research has shown promising effects of PHGG in the treatment of a number of gastrointestinal conditions, including IBS. The aim of this review was to systematically evaluate the efficacy of PHGG in the treatment of IBS.

Methods

A computer-based search of MEDLINE, EMBASE, and the Cochrane Library was conducted in June 2015. A hand-search of the bibliographies of relevant papers, previous reviews, and authors' personal libraries was also undertaken. Trials were included in the review if they were human clinical trials (of any design) investigating the effects of PHGG on IBS-related symptoms or quality of life. There were no language restrictions. Eligibility assessment and data extraction were performed by two independent researchers.

Results

Nine trials were identified that met all eligibility criteria. Seven were open label trials and two were randomised, placebo-controlled trials. Heterogeniety in trial design and outcome precluded meta-analysis. All nine trials had results that were suggestive of the efficacy of PHGG.

Conclusions

PHGG shows promise in the treatment of IBS. A number of different mechanisms of action have been suggested, including modification of the gastrointestinal microbiota, normalisation of motility, and inhibition of substance P expression. Large-scale, randomised, controlled trials appear warranted.

THE ACTION OF DIFFERENT PROBIOTICS IN CORRECTING ACTIVITY OF INTESTINAL ENZYMES IN RATS AFTER ADMINISTRATION OF ANTIBACTERIAL AGENTS

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Objective
Comparison of different probiotics in restoring digestion in the intestine of rats after administration of antibacterial agents.

Methods
After administration of antimicrobials (ampicillin+methronidazole), rats were getting probiotics: "Laminolact" containing *Enterococcus faecium* L3, "Genobakt" (the mixture of bacteria *E. faecium* L3, *Lactobacillus rhamnosus* K32, *Bifidobacterium longum* GT15), Linex®, Bifiform®, or phosphate buffer (PBS), or after administration of water - PBS (control).

Results
In the absence of a probiotics after administration of antimicrobials, changes in the mucosa mass in the ileum and colon and the chyme mass in the colon, as well as the activity of the intestinal digestive enzymes were observed. Introduction of probiotics provided a correction of changes in the mass of intestinal mucosa. Concerning the chyme mass in the colon, the effect was only observed in the case of "Laminolact". After the introduction of probiotics, the activity of alkaline phosphatase (AP) in mucosa of the jejunum and in the intestinal chime was increased (to a lesser extent after Bifiform®). The change of maltase (M) activity in the small intestinal mucosa was less significant after Linex®, aminopeptidase M (AP-M) - after "Genobakt", glycyl-L-leucine dipeptidase (GL) - after Bifiform®. In the chyme the change of M-activity was the best reduced by "Genobakt", AP-M - by "Laminolact" and GL - by Linex® and Bifiform®.

Conclusions
Introduction of various probiotics to correct intestinal dysbiosis in rats differently affects the activity of intestinal enzymes involved in the metabolism of carbohydrates, proteins and lipids.

PROBIOTICS IMPROVE THE IRON ABSORPTION FROM A MEAL

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Objective
Iron deficiency is common and adding probiotics to meals could be one way to increase the iron absorption. The aim of this study was to test the hypothesis that non-heme iron absorption from a meal is improved by adding *Lactobacillus plantarum* 299v (Lp299v).

Methods
Iron absorption was studied in healthy women of reproductive age using a single-blind crossover design in two trials applying the double isotope (^{55}Fe and ^{59}Fe) technique. Study meals containing breakfast buns with margarine and orange jam were served for breakfast on four consecutive days. The first two days was control capsules containing iron given with the meal and the next two days was freeze dried Lp299v included in the capsules together with iron and given with the meal. The iron in the control meal was marked with ^{55}Fe and in the Lp299v meal with ^{59}Fe. The absorption of the iron isotopes was measured in blood and the obtained absorption values was normalised to a 40% iron absorption of a reference dose.

Results
In the first trial 14 subjects completed the study. The mean iron absorption from the meal with Lp299v was 22.4%, while the mean absorption from the control meal was 17.4% ($p=0.04$). In the second trial 28 subjects completed the study. The mean iron absorption in the meals with and without Lp299v was 24.5 and 20.9%, respectively ($p=0.003$).

Conclusions
Two clinical trials have shown that the non-heme iron absorption can be increased significantly with 23% (mean value) if Lp299v is included in a meal.

ANTI-OBESITY POTENTIAL OF LACTOBACILLUS SALIVARIUS LPLM-01 IN A MURINE MODEL OF DIET-INDUCED OBESITY

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Objective

To evaluate the metabolic effect of oral consume of the native probiotic *Lactobacillus salivarius* LPLM-01 on a murine model of diet-induced obesity.

Methods

48 C57BL/6 female mice were randomized into two groups and freely fed with either a high-fat diet (HFD, 24% fat) or a low-fat diet (LFD, 4.3% fat). After three months, the HFD group showed a significant weight gain when compared to the LFD group (36.3±7.5g vs 25.1±1.6g;$p<0.01$.) Next, each diet group was again randomized into two subgroups (n=10-12); one received a placebo, or placebo supplemented with $1x10^9$ CFU/g of LPLM-01. After three months of treatment, an insulin tolerance test and an oral glucose tolerance test were carried out. Plasma samples were taken for glycaemia, insulin and leptin analyses. The Body Mass Index (BMI) was calculated and subcutaneous and periovarian adipose tissues were taken. Statistical analysis was made.

Results

Supplementing the diet with the strain LPLM-01 does not significantly modify glucose tolerance or insulin response, but it did reduce body weight gain in both diet group when compared to the placebo ($p<0.05$). Weight loss was related to a reduction of BMI, fasting glucose, insulinemia, and subcutaneous and periovarian adipose tissues, without being statistically significant. However, weight loss was also related to a significant reduction of leptinemia in the HFD+LPLM-01 group, in comparison with the placebo group ($p<0.05$).

Conclusions

Supplementing the diet with the strain LPLM-01 has a beneficial effect on obesity, reducing weight gain in this model.

EFFICACY OF PROBIOTICS IN PATIENTS WITH LACTOSE INTOLERANCE - A PRELIMINARY STUDY

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Background

Lactobacillus bulgaricus and Streptococcus thermophilus produce lactase enzyme. Probiotics may alleviate lactose intolerance by modifying the intestinal flora into one which contains lactase-producing bacteria.

Aims

Assessing the efficacy of probiotics in improving lactose intolerance.

Methods

Patients were treated with a unique probiotic formulation (Bio-25, SupHerb, Israel) for 6 months. All patients completed a demographic questionnaire as well as a visual analog scale (VAS) for the assessment of the intensity and frequency of bloating, flatulence, abdominal pain and change in bowel habits, at entry, every 8 weeks and at the end of treatment period. Measurement of hydrogen levels (parts per million - ppm) at each of these time points was also performed. Study end points were: Improvement in symptom intensity or frequency, and the decrease below cut off point of 20ppm of the breath test. The Wilcoxon signed-rank test was used to compare symptom intensity and severity before and after treatment.

Results

Included eight symptomatic female patients with a positive lactose intolerance breath test. Mean age and mean body mass index (BMI) (kg/m2) were: 36.4±18.6 years and 25.2, respectively. Treatment with probiotics was associated with a significant improvement in the reported intensity of bloating ($z=2.55$, $p=0.11$) and flatulence ($z=2.21$, $p=0.027$); frequency of bloating ($z=2.06$, $p=0.039$) and flatulence ($z=2.04$, $p=0.041$); abdominal pain ($z=2.06$, $p=0.039$), and constipation ($z=2.07$, $p=0.039$). Lactose breath test was successfully normalized in two (25%) patients.

Conclusions

Treatment with probiotics may lead to symptomatic improvement in patients with lactose intolerance. A larger study is warranted to confirm our findings.

RESTORE AND MAINTAINING OF HUMAN GUT MICROBIOTA DURING THE ANTIBACTERIAL THERAPY

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Objective

The basic reason of the common adverse events of the antibiotic therapy are the antibiotic-associated gut microbiota changes. To solve this problem the combination of antibiotics with prebiotic was developed (ecoantibiotics). Combination of antibiotic with prebiotic could help to save the composition of the normal human intestinal microflora.

Methods

Several clinical trials were conducted to evaluate the antibiotic and prebiotic combination efficacy, safety, and influence on microbiota in comparison with antibiotic monotherapy. Antibiotics from group fluoroquinolones, macrolide, beta-lactam were used with the prebiotic in broad range of daily dose from 300 to 1200 mg. The microbiota condition was evaluated using microbiological methods, SCFA analysis, next-generation sequencing technologies.

Results

All evaluated combinations were comparable in efficacy with their analogues without prebiotic. The number of adverse events in investigated groups was less than in groups of comparative antibiotics ($p<0.05$).
Using microbiological methods in the amoxicillin with clavulanic acid study the number of patients with «normal» content of bifidobacteria and lactobacilli in antibiotic with prebiotic group was twiceas high than in the control group. Next-generation sequencing technologies based on 16S rRNA genes sequencing shown that the number of genera observed in the samples of reference drug group were low in comparison with the investigated group.

Conclusions

These results provide evidence of restores and maintains normal physiological and bacterial flora of the intestinal tract during antibacterial treatment. Ecoantibiotic decrease risk of side effects from antibiotic treatment and consequently can prevent multifactorial chronic disorders associated with disruption of intestine microbiocenosis after antibiotic therapy.

THE USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IS FREQUENT IN PATIENTS WITH PANCREATIC DISORDERS

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Objective

Prevalence of Herbal remedies and other not conventional medicines (CAM) use in patients with pancreatic diseases and screen pancreatotoxicity.

Methods

Cross-sectional survey of consecutive patients seen at a pancreatic disorders outpatient clinic. Data were collected with questionnaire regarding demographics, CAM usage, reasons for CAM use, and respondent experiences of effects from CAM.
Descriptive statistics were used to analyse the prevalence of CAM use. Fisher or t-test were used to determine any association between CAM use, demographics and lifestyle factors.

Results

91 consecutive patients were enrolled (49.5% male; mean age 65+-11.7). The 42% of patients used CAM (44.7% male; mean age 65+-10.6) and the 21% for more then 1 year. 46% of patients with previous acute pancreatitis, 49% with chronic pancreatitis and 37% with IPMN used CAM. In most cases the use of CAM was for helping the standard therapies (31.5%) and for an overall feeling better (18%). 58% of patients reported advantages with treatment. CAM users were more often female (63% vs 47%), with higher school degree (42% vs 32%), performed physical activity more than once a week (42% vs 33%). However, none of these differences were statistically significant.
Two patients reported use of *serenoa repens* that has been associated with pancreatotoxicity.

Conclusions

The 42% rate of CAM use in patients with pancreatic disease is similar or higher to those reported in other GI diseases. 60% of patients report benefit with CAM. The use seems more frequent in female with higher education level and "healthier lifestyle". Patients might not be aware of potential pancreatotoxicity of CAM, which should be carefully considered by physicians.

THE EVALUATION OF EMULSION TECHNIQUE FOR MICROENCAPSULATION OF LACTOBACILLUS PLANTARUM WITH ALGINATE-RESISTANT STARCH CAPSULES

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Objective

Emulsion technique is one of the most successful methods of microencapsulation which have been used to improve the viability of probiotic bacteria in foods and in the gastrointestinal adverse conditions. Resistant starch as prebiotic can improve the viability of probiotic bacteria by providing additional protection. The present study aimed to evaluate the emulsion technique for microencapsulation of *L. plantarum* using alginate-resistant starch mixed gel.

Methods

A mixture of sodium alginate (2% w/v), and resistant starch (2% w/v), containing probiotic culture (1% v/v), was used in microencapsulation. The morphology of microcapsules was studied using scanning electron microscopy (SEM). Light microscopy was used for direct observation of living entrapped bacteria inside the capsules and their releasing process, after lugol staining. The metabolic activity of encapsulated bacteria was investigated by measurement of pH and optical density of inoculated MRS-broth medium. The stability of microcapsules was studied in bile salts solution (BSS), simulated gastric juice (SGJ), pancreatin enzymes solution (PES), and phosphate buffer solution (PBS), with or without 400 rpm mechanical shaking.

Results

The prepared microcapsules were spherical with the average diameter of 19.87 ± 1.49 µm, containing 1.7×10^9 cfu g-1 metabolically active bacterial cells. Encapsulation yield was obtained 30.35%. The stability of microcapsules were respectively, 60 and 90 min, in BSS and PES without mechanical shaking, and 30 min in the other tested conditions.

Conclusions

This study indicated that the emulsion technique of microencapsulation could be successfully applied to enhance the viability of *L. plantarum* in gastrointestinal adverse conditions.

CHEMICAL CHARACTERISTICS AND SURVIVAL OF PROBIOTICS IN CHEDDAR CHEESE FORTIFIED WITH PHENOLIC COMPOUNDS OF MANGO (MANGIFERA INDICA L.) KERNEL OIL

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Objective

A study was performed to assess the chemical characteristics and survival of probiotics in cheddar cheese fortified with mango kernel oil

Methods

Milk fat was partially replaced with mango kernel oil from 2.5% to 10%. Cheese milk was added with 2% bulk starter culture of *lactococcus lactis* ssp. *lactis, lactococcus lactis* ssp. *cremoris*, supplemented with *lactobacillus acidophilus* and *biofedobacterium bifedum* at 10^8/ml. Cheddar cheese prepared from 100% milk fat served as control, with no difference in starter and probiotics. Control and experimental samples were ripened at 8±2oC for 90 days, evaluated for chemical, microbiological and sensorial parameters at 0, 45 and 90 days.

Results

Total phenolic content of cheese formulated from 10% mango kernel oil were 62mg/g GAE, as compared to control, 0.14mg/gGAE. HPLC characterization of cheddar cheese showed the existence of chlorogenic acid, caffeic acid, quercetin in considerably higher concentrations over the control. Cheddar cheese fortified with 5% mango kernel did not have any inhibitory effect on the growth of *lactobacillus acidophilus and bifedobacterium bifedum*. Beyond this concentration, phenolics of mango kernel oil inhibited the starter and probiotics. Concentration of free fatty acids and organic acids in cheddar cheese fortified with mango kernel oil were not different at all the test intervals. Sensory characteristics of cheddar cheese fortified with phenolic compounds of mango kernel oil (5% oil), *lactobacillus acidophilus* and *biofedobacterium bifedum* at 10^8/ml was superior to control.

Conclusions

5% mango kernel can be added in the formulation of cheddar cheese with no effect on probiotics and sensory attributes.

AGING-RELATED CHANGES OF GUT MICROBIOTA COMPOSITION FROM NEW-BORN TO CENTENARIAN, CROSS-SECTIONAL STUDY

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Objective

It has been reported that the composition of human gut microbiota changes with age; however, the details have not been clarified.

Methods

Fecal samples of 367 healthy Japanese between the ages of 0 and 104 years were analyzed by high-throughput sequencing of amplicons derived from the V3-V4 region of the 16S rRNA gene.

Results

The relative abundance of Actinobacteria decreased dramatically after weaning and the decreasing trend continued through the life-span. Those of Firmicutes turned to be the most predominant phylum after weaning accompanied with an increase in the compositions of Bacteroidetes and Proteobacteria over 70 years old. Hierarchical Ward-linkage clustering based on the abundance of genera indicated five clusters, each with median (interquartile range) of age of 3 (0-35), 33 (24-45), 42 (32-62), 77 (36-84) and 94 (86-98) years old, respectively. Analysis based on bacterial co-abundance groups defined by Kendall correlations between genera revealed four patterns of microbiota each enriched in infant, adult, elderly and both of infant and elderly, respectively. In addition, functional properties prediction based on PICRUSt showed that the relative abundance of transporters decreased along with aging.

Conclusions

Our results indicate the existance of some patterns and turining points in the composition change of gut microbiota with aging. In addition, results of functional property prediction suggest that nutrients existing in the gut might play an important role in shaping the composition of gut microbiota.

DISCOVERY OF A CONJUGATIVE MEGAPLASMID IN BIFIDOBACTERIUM BREVE

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Objective

The objective of this study was to characterise a novel conjugative megaplasmid identified in *Bifidobacterium breve* JCM7017.

Results

Bifidobacterium breve is a common and sometimes very abundant inhabitant of the human gut. Genome sequencing of *B. breve* JCM 7017 revealed the presence of an extrachromosomal element, designated pMP7017, of more than 190 kb, thus representing the first reported bifidobacterial megaplasmid. *In silico* characterization of this element revealed several genomic features supporting a stable establishment of the megaplasmid in its host, illustrated by predicted CRISPR-Cas functions that are known to protect the host against intrusion of foreign DNA. Interestingly, pMP7017 is also predicted to encode a conjugative DNA transfer apparatus and consistent with this notion we demonstrate conjugal transfer of pMP7017 to representative strains of *B. breve* and *B. longum* subsp. *longum*. We furthermore demonstrate the presence of a megaplasmid with homology to pMP7017 in two *B. longum* subsp. *longum* strains.

Conclusions

These results demonstrate for the first time the presence of a conjugative megaplasmid in a Bifidobacterium strain and also demonstrate that this megaplasmid can be conjugally transferred to representative strains of *B. breve* and *B. longum* subsp. *longum.*

EXPOSURE OF LACTOBACILLUS ACIDOPHILUS AND LACTOBACILLUS CASEI TO 2.4 GHZ ELECTROMAGNETIC RADIOFREQUENCY RADIATION ENHANCES THE GROWTH OF THESE PROBIOTIC BACTERIA

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Objective

Lactobacillus acidophilus, a gram positive bacteria in the genus Lactobacillus, is believed to benefit health through producing vitamin K and lactase. On the other hand, *Lactobacillus casei* is also a beneficial bacteria which produces lactic acid to decrease the pH level in the digestive system and prevents the growth of detrimental bacteria. Probiotic products must contain more than 10 millions living probiotic microorganisms per gram. Over the past several years, our lab has focused on the health effects of exposure to different sources of electromagnetic fields. Furthermore, we have recently explored physical methods for converting drug-resistant bacteria to drug-sensitive. The main goal of this study was to assess the bioeffects of short term exposure of *Lactobacillus acidophilus* and *Lactobacillus casei* to 2.4 GHz radiofrequency (RF) radiation emitted from a common Wi-Fi router on the proliferation of these probiotic bacteria.

Methods

Pure culture strains of *Lactobacillus acidophilus* and *Lactobacillus casei* obtained from (Chris- Hansen Denmark). Samples were exposed to electromagnetic radiofrequency radiation (EMRR) emitted from a 2.4 GHz Wi-Fi router for 15, 30, 45 and 60 minutes at a distance of 5 cm from the router antenna. The control samples were sham-exposed to EMRR. All samples were grown in MRS broth at 37 °C for 18 hours. Cell counts were enumerated after 72 hours of incubation on MRS agar. The method of counting colony forming units (CFU) was used to assess the proliferation of bacteria.

Results

The growth of *Lactobacillus acidophilus* in samples exposed to to EMRR for 30, 45 and 60 minutes showed statistically significant increases (P=0.001, P=0.002, P=0.002, respectively) compared to those of sham-exposed bacteria. In this experiment, there was no difference between the growth in samples exposed to to EMRR for 15 minutes and sham-exposed bacteria. On the other hand, in a similar pattern, while there was no difference for samples exposed/sham-exposed to EMRR for 15 min, the growth of *Lactobacillus casei* in samples exposed to to EMRR for 30, 45 and 60 minutes showed statistically significant increases (P=0.041, P=0.008, P=0.002, respectively) compared to those of sham-exposed bacteria.

Conclusions

This study showed that short term exposure of *Lactobacillus acidophilus* and *Lactobacillus casei* to 2.4 GHz radiofrequency (RF) radiation emitted from a common Wi-Fi router significantly increases the proliferation of these probiotic bacteria. Further research in this field can open new horizons in probiotic food industry through stimulation of bacterial growth.

PROTECTIVE ACTIVITY OF LACTOBACILLUS RHAMNOSUS GG-DERIVED FACTORS ON PATHOGEN LIPOPOLYSACCHARIDE (LPS)-INDUCED DAMAGE OF HUMAN COLONIC SMOOTH MUSCLE CELLS

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Objective

Some beneficial effects of probiotics result to be determined by secreted probiotic-derived factors, identified as "postbiotic" mediators. Aim of this study was to evaluate if supernatants harvested from LGG cultures protect human smooth muscle cells (SMC) from LPS-induced myogenic damage.

Methods

L. rhamnosus GG (ATCC 53103 strain) was grown in MRS medium at 37°C and samples were collected in exponential phase, in early, middle and late stationary phases. Supernatants were recovered by centrifugation, filtered and stored at -20°C. The SMC culture was exposed for 24h to purified LPS (1µg/ml) of a pathogen strain of *Escherichia coli* (O111:B4) with and without supernatants. Postbiotics effects were evaluated on morphofunctional alterations and IL-6 production. Data are expressed as mean±SE ($p<0.05$ significant).

Results

LPS induced persistent significant 20.5%±0.7 cell shortening and 34.5%±2.2 decrease in acetylcholine-induced contraction of human SMC. These morphofunctional alterations were paralleled to a 365.65%±203.13 increase in IL-6 production. These effects were reduced in the presence of LGG-supernatants. Supernatants of the middle exponential phase already partially restored LPS-induced cell shortening by 57.34%±12.7 and IL6 increase by 145.8%±4.3 but had no effect on LPS-induced inhibition of contraction. Maximal protective effects were optained with supernatants of the late stationary phase with LPS-induced cell shortening restored by 84.1%±4.7, inhibition of contraction by 85.5%±6.4 and IL6 basal production by 92.7%±1.2.

Conclusions

The LGG-derived products are able to protect human SMC from LPS-induced myogenic damage. Novel insights are provided for the possibility that LGG-derived products could reduce the risk of progression to a postinfective motor disorder.

THE PERSPECTIVE USE OF NOVEL STRAINS LACTOCOCCUS LACTIS SSP. LACTIS FOR FOOD

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Introduction

The traditional use of the dairy lactococci in various food fermentations, the ability to synthesis of different kind of bioactive molecules, such as organic acids, bacteriocins and other antimicrobial agents. can be safety used in different food system (biopreservatives, probiotics and prebiotics). Among the probiotic correctors of normal microbiota special interest present the lactococci, isolated from national products with therapeutic–preventive effect. In light of the increased antibiotic resistance among pathogens, natural antimicrobial substances have attracted attention as an alternative means to prevent infection by pathogens. Screening of novel strains of *Lactococcus lactis* as the perspective for food system usefull for human health was performed.

Methods

We have isolated of effective strains from raw milk, milk products and also products of functional nourishment of mixed lactic acid and alcoholic fermentation from various climatic regions, which were widely used by people to prevent diseases of the gastrointestinal tract and cardiovascular system, to cure of tuberculosis etc. The phylogenetic analysis using the sequences of the 16S rRNA genes was performed. Biological and analytical HLPC, TLC, FAB-MS, FD-MMS-methods were carried out to determine of antimicrobial substances. The probiotic properties were determined as levels of resistance to bile and hydrochloric acids, also the presence of superoxide dismutase (SOD) activity using the xanthine oxidase-cytochrome c method. Proteolitic activity was determined at the various levels of pH (3,0; 4,2; 5,3; 7,0). It has been shown that lactococci influence on physiological properties of the organisms of laboratory animals. Biomodel of CBRB mouse females.

Results

According to microbiological properties and gene sequence of 16S rRNA isolated novel strains confirmed their taxonomic state as *Lactococcus lactis* ssp. *lactis* (GenBank database № DQ 255954, EF100777 - EF114305). Many strains inhibited growth of gram-positive bacteria only. But some of the selected strains expressed a broad spectrum of activity against pathogens: *Listeria monocytogenes, Staphylococcus aureus, Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, Salmonella* and fungi of *Aspergillus, Fusarium, Penicillum* genera, as well as *Rhodotorula aurantiaca, Candida albicans*. These strains have high antibiotic activity up to 3600 IU/ml compared to food preservative Nisapline (Applin & Barrett, UK).) and 1500-2700 IU/ml compared to antifungal antibiotic Nistatine. The individual antibiotic substances differed from each other by molecular mass, Rf values and biological propertiest. The main compound of antibiotic complex had polypeptide nature as nisin. Other component was a positively charged substance identified as peptide.built of the 20 amino acids, differed from nisin by molecular mass (M= 2589 Da) and activity against gram-positive and gram-negative bacteria. Components with a low molecular mass (Mr=506–829Da) were hydrophobic and contained aromatic groups, keto-, aldehydic and alkyl residues which were responsible for antifungal activity. Antimicrobial substances were identified as novel substances, that were absent in Berdy database BNPD. The perspective strains were resistant to the action of the bile acids at concentration of bile from 0.8 to 1.0% and hydrochloric acid. The strains possesses relatively high SOD activity (20 U/mg of protein) and has high proteolytic activity at different pH ($3{,}8\cdot10^{-3}$ -$23{,}8\cdot10^{-3}$ PU/ml).

Discussion

The novel effective strains of *L.lactis* ssp.*lactis* with broad spectrum action including antifungal activity were obtained. That is rare biological property for the strains of these species, which have status "GRAS" (absolutely harmless for human health and animals). Thus, the unique properties of this strain, somehow: stability at the condition of gastrointestinal tract, the spectrum of bactericidal and antifungal action to the pathogens, and relatively high superoxide dismutase and proteolytic activities, the absence of toxicity, make it possible to recommend it for the potential biopreservatives, probiotic and prebiotic cultures.

PHYSICOCHEMICAL PROPERTIES OF FUNCTIONAL SCAMORZA CHEESE FROM OVINE MILK

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Objective

The present study was undertaken to produce functional Scamorza cheese from Gentile di Puglia ewe's milk by incorporating probiotic strains into the cheese matrix and to evaluate the physicochemical characteristics of Scamorza ewe's milk cheese.

Methods

Gentile di Puglia ewe's bulk milk was used for Scamorza cheese production. Cheeses were denoted S-CO for control Scamorza cheese, S-BB for Scamorza cheese made using a mix of *Bifidobacterium longum* and *Bifidobacterium lactis*, and S-LA for Scamorza cheese made using *Lactobacillus acidophilus* as probiotic strain. Probiotic cell recovery in cheese was 7.55±0.07 log10 cfu/g and 9.09±0.04 log10 cfu/g in S-LA and S-BB cheese, respectively. The derivatised free amino acids (FAAs) were separated and quantified by RP-HPLC. Total lipids from cheeses were extracted; derivatization was performed and FFA And CLA were separated using gas-chromatographic equipment.

Results

Probiotic cheeses displayed the highest levels of lactic microflora. The matured Scamorza cheese containing the mix of *B. longum* and *B. lactis* was characterized by significantly higher level of Gln, Ser, Arg, Ile, Leu whereas cheese containing *L. acidophilus* was characterized by higher levels of Tyr and Met. Total FFA content was the highest in S-LA, intermediate in S-BB and the lowest in S-CO cheese; in particular, Scamorza cheese containing *L. acidophilus* showed the highest level of vaccenic acid, oleic acid and total CLA.

Conclusions

Probiotic bacteria survived through the technological phases of pasta filata cheese production, maintained their specific metabolic pathways, and conferred functional properties to Scamorza ewe's milk cheese.

POSTER PRESENTATION

FACULTY

FACULTY

NAME	COUNTRY	PAGE
Albini Adriana	*Italy*	
Alvaro Domenico	*Italy*	
Annibale Bruno	*Italy*	
Anti Marcello	*Italy*	
Antonelli Mariangela	*Italy*	
Arcangeli Giorgio	*Italy*	
Barbara Giovanni	*Italy*	
Barnich Nicolas	*France*	
Baumann Ulrich	*Germany*	
Belzer Clara	*The Netherlands*	
Berni Canani Roberto	*Italy*	
Biancone Livia	*Italy*	
Bragazzi Maria Consiglia	*Italy*	
Brandi Maria Luisa	*Italy*	
Brigidi Patrizia	*Italy*	
Burnet Phil W.J.	*UK*	
Cammarota Giovanni	*Italy*	
Candela Marco	*Italy*	
Caprilli Renzo	*Italy*	
Capurso Gabriele	*Italy*	
Capurso Lucio	*Italy*	
Castellazzi Anna Maria	*Italy*	
Cavalieri Duccio	*Italy*	
Ciacci Carolina	*Italy*	
Cicala Michele	*Italy*	
Collins Stephen M.	*Canada*	
Corazziari Enrico	*Italy*	
Crespi Massimo	*Italy*	
Cristaudo Antonio	*Italy*	
Cucchiara Salvatore	*Italy*	
De Filippo Carlotta	*Italy*	
De Seta Francesco	*Italy*	
Del Piano Mario	*Italy*	
Delle Fave Gianfranco	*Italy*	
Delzenne Nathalie	*Belgium*	
Desreumaux Pierre	*France*	
Dhiman Radha K.	*India*	
Di Iorio Romolo	*Italy*	
Dorè Joel	*France*	
Drago Lorenzo	*Italy*	
El Zouki Abdelnaser	*Quatar*	
Everard Amandine	*Belgium*	
Facchinetti Fabio	*Italy*	
Fantini Massimo	*Italy*	
Fava Francesca	*Italy*	
Fazio Chiara	*Italy*	
Ferrazzi Enrico	*Italy*	
Festi Davide	*Italy*	
Fiocchi Alessandro	*Italy*	
Fogliano Vincenzo	*The Netherlands*	
Francavilla Ruggiero	*Italy*	

NAME	COUNTRY	PAGE
Gasbarrini Antonio	*Italy*	
Gasbarrini Giovanni	*Italy*	
Gentileschi Paolo	*Italy*	
Grossi Enzo	*Italy*	
Guarner Francisco	*Spain*	
Hamaker Bruce R.	*USA*	
Henry Amanda G.	*Germany*	
Iacobelli Stefano	*Italy*	
Ianiro Gianluca	*Italy*	
Iebba Valerio	*Italy*	
Ippolito Giuseppe	*Italy*	
Isolauri Erika	*Finland*	
Koch Maurizio	*Italy*	
Koletzko Berthold	*Germany*	
Koletzko Sibylle	*Germany*	
Lambert Carine	*Belgium*	
Laterza Lucrezia	*Italy*	
Losurdo Giuseppe	*Italy*	
Manxhuka-Kerliu Suzana	*Kosovo*	
Marabelli Romano	*Italy*	
Marchetti Paolo	*Italy*	
Marzorati Massimo	*Belgium*	
McCoy Kathy	*Switzerland*	
Mihatsch Walter	*Germany*	
Miraglia del Giudice Michele	*Italy*	
Mogna Luca	*Italy*	
Montori Alberto	*Italy*	
Morelli Lorenzo	*Italy*	
Moschetta Antonio	*Italy*	
Murphy Eileen	*Ireland*	
Natali Pier Giorgio	*Italy*	
Nisticò Paola	*Italy*	
Nobili Valerio	*Italy*	
Ottaviani Monica	*Italy*	
Pagnini Cristiano	*Italy*	
Pallone Francesco	*Italy*	
Petta Salvatore	*Italy*	
Picardo Mauro	*Italy*	
Ponsioen Cyriel Y.	*The Netherlands*	
Ponziani Francesca	*Italy*	
Putignani Lorenza	*Italy*	
Rasio Debora	*Italy*	
Rescigno Maria	*Italy*	
Roda Enrico	*Italy*	
Ross Sarah	*Ireland*	
Rotilio Giuseppe	*Italy*	
Saggioro Alfredo	*Italy*	
Sanz Yolanda	*Spain*	
Savarino Vincenzo	*Italy*	
Scarpa Bruno	*Italy*	

NAME	COUNTRY	PAGE
Scarpignato Carmelo	*Italy*	
Severi Carola	*Italy*	
Severini Carla	*Italy*	
Sharaiha Ziad	*Jordan*	
Signoretti Marianna	*Italy*	
Sokol Harry	*France*	
Staiano Annamaria	*Italy*	
Stanghellini Vincenzo	*Italy*	
Szajewska Hania	*Poland*	
Tabbers Merit M.	*The Netherlands*	
Tagliabue Anna	*Italy*	
Torre Giuliano	*Italy*	
Tozun Nurdan	*Turkey*	
Tuohy Kieran Michael	*Italy*	
van Ommen Ben	*The Netherlands*	
Vandenplas Yvan	*Belgium*	
Vanderhoof Jon	*USA*	
Vergnolle Nathalie	*France*	
Verkerk Ruud	*The Netherlands*	
Vicariotto Franco	*Italy*	
Vitaglione Paola	*Italy*	
Yaqoob Parveen	*UK*	
Zadro Cristina	*Italy*	
Zorzi Francesca	*Italy*	

GENERAL INFORMATION

DATES
September 13-15, 2015

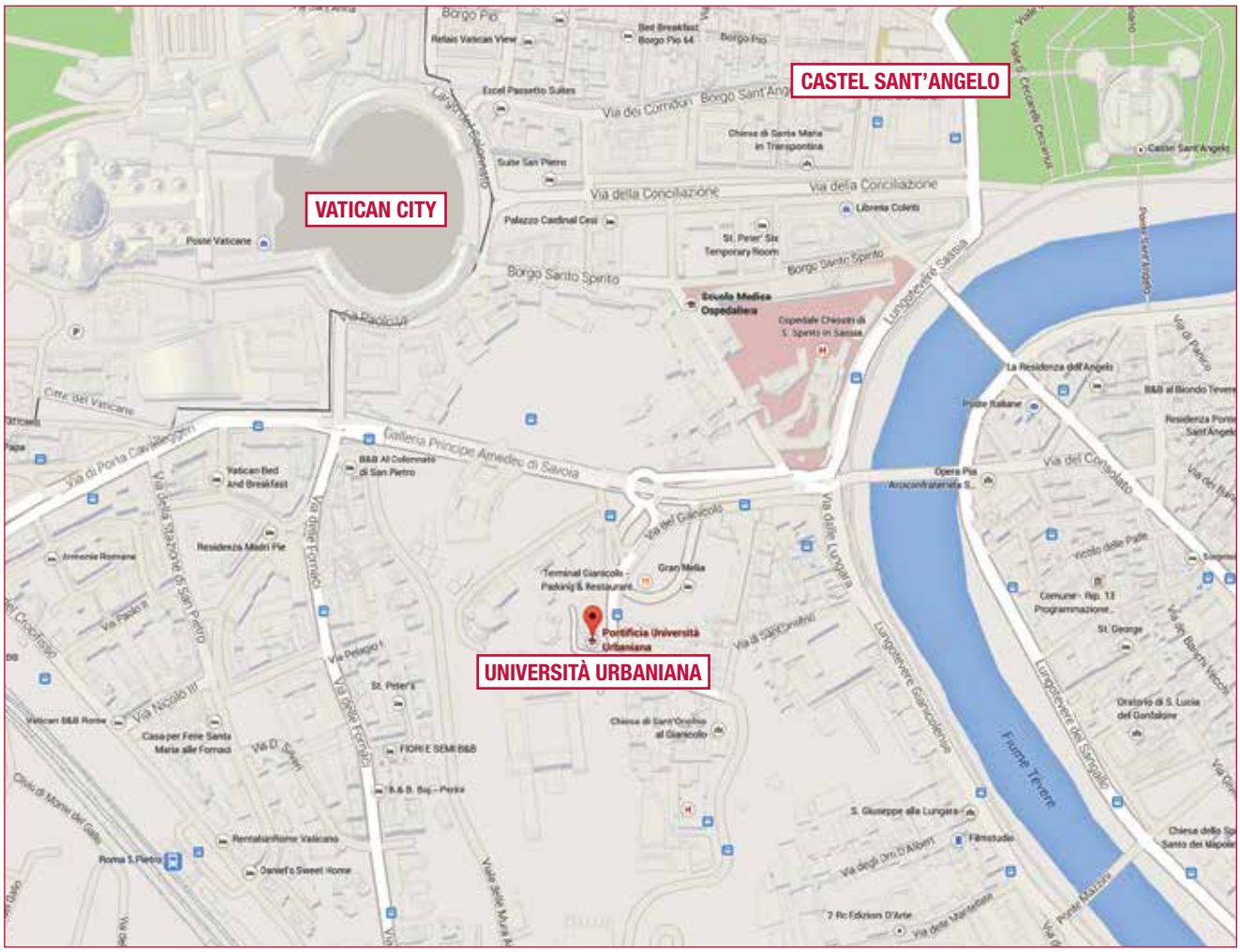
VENUE
Università Urbaniana, Terminal Gianicolo Via Urbano VIII, 16, 00165 Rome, Italy
Phone +39 06/69889611, Fax +39 06/69881871
www.urbaniana.edu

LANGUAGE
English will be the official language of the Meeting.

CLOTHING
Informal for all occasions.

CLIMATE
September in Rome is still hot but unpredictable.

BADGES
All participants, accompanying persons and exhibitors are kindly requested to wear their badges throughout the Meeting area in order to be admitted to the scientific sessions and to all the activities of the Meeting.



REGISTRATION FEES (22% VAT included)

Participants	€ 300,00
Biologists	€ 150,00
Dieticians/Nutritionists	€ 150,00
Nurses	€ 100,00
Members Mediterranean Task Force for Cancer Control	€ 150,00
Members AIIPA, Gruppo Miaf-Federchimica	€ 150,00
Under 35*	€ 150,00
Pediatric Day**	€ 200,00
Under 35 and ESPGHAN member for Pediatric Day	€ 100,00
Daily Registration	€ 200,00
Accompanying Persons	€ 150,00

* the applicant's registration form must be accompanied by a copy of an official document.

** If you are not registered to the Meeting.

Registration fee includes:

Participants

- Admission to scientific sessions, technical exhibition
- Final Programme
- Selected proceedings and abstract
- Coffee corner and lunch
- Opening ceremony and welcome cocktail
- Certificate of attendance
- Italian CME certificate (to whom entitled)

Accompanying Persons

- Opening ceremony and welcome cocktail
- Two half day tours (to be defined)

Cancellation Policy

Written cancellation must be sent to the Organising Secretariat.
50% of the total amount will be refunded for cancellations received within July 31, 2015, bank expenses excluded.
No refunds will be made after this date. Refunds will be made after the Meeting has been concluded.

BANKING AND EXCHANGE

The Italian monetary system is Euro. Foreign currency may be exchanged at banks during normal banking hours, at hotels, at airports and in exchange offices. All major credit cards are accepted in most hotels, restaurants and shops.

LIABILITY AND INSURANCE

The Organising Secretariat cannot accept liability for personal injuries or for loss of, or damage to, property belonging to meeting participants (or their accompanying persons), either during or as a result of the meeting. Please check the validity of your own insurance.

CERTIFICATE OF ATTENDANCE

The certificate of attendance will be given to all registered participants at the Organising Secretariat desk at the end of the Meeting.

FOOD AND BEVERAGES
Business lunch and coffee/tea during breaks (as indicated in the programme) are included in the registration fee.

PARKING
Cars could be parked at terminal Gianicolo. Participants to the Meeting will have a special rate. To obtain it, please contact the Organising Secretariat Desk.

ABOUT ROME
Rome is the capital city of Italy and of the Lazio region, as well as the country's largest and most populous comune, with more than 2.7 million residents. The metropolitan area has a population of about 4 million. It is located in the central-western portion of the Italian peninsula, where the river Aniene joins the Tiber.
The Mayor of Rome is Ignazio Marino. An enclave of Rome is the State of the Vatican City, the sovereign territory of the Holy See. It is the smallest nation in the world, and the capital of the only religion to have representation in the United Nations (as a non-member observer state).
Rome, Caput mundi ("capital of the world"), la Città Eterna ("the Eternal City"), Limen Apostolorum ("threshold of the Apostles"), la Città dei Sette Colli ("the city of the seven hills") or simply l'Urbe ("the City"), is thoroughly modern and cosmopolitan. As one of the few major European cities that escaped World War II relatively unscathed, central Rome remains essentially Renaissance and Baroque in character. The Historic Centre of Rome is listed by UNESCO as a World Heritage Site.

AIRPORT INFORMATION
Rome can easily be reached by plane and is served by two international airports.
Participants can fly into Rome via Leonardo da Vinci Airport, located in Fiumicino, 34 km from Rome's historic city centre or via Ciampino Airport, situated 15 km southeast of central Rome.

ACCESS TO ROME FROM THE AIRPORTS
• Access from Leonardo da Vinci Airport:
The airport is served by the Leonardo Express train operated by Trenitalia, available at the airport terminal. The trip takes 30 minutes (no stops) to Termini Station in Rome - there are two such connections per hour. Alternatively, local trains leave once every 15 minutes, stopping at all train stations. You may have to change at Trastevere, Ostiense (Metro Piramide) or Tuscolana.
Rental cars are available in the airport terminal from all the usual companies.

• Access from Ciampino Airport:
There is no rail transport at Ciampino Airport. The options are to take a bus to a rail station (either metro or regular train) or to take a bus or taxi all the way.

ALL THE WAY BY ROAD TRANSPORT
Terravision runs a direct bus service to Termini. The price is € 8 c.a. one-way or € 11.00 c.a. return, taking 40 minutes (about 20 services a day). Despite timing buses to connect with flights, passengers on the return trip from Termini are asked to board the bus 2.5 hours before their flight's departure time. The last bus is at 19:20. Terravision also offers buses from Fiumicino airport to Termini, and a transfer bus between the two airports.
Schiaffini also runs direct buses to Termini station for € 3.90 one-way, taking 40 minutes, but with far fewer departures than Terravision (see above). These buses are not mentioned on the airport website but they can be found on Schiaffini's own site. BusShuttle or ATRAL Line runs a service similar to Terravision. Their stop near Termini is about 20 metres up the road from Terravision's. Cost is € 4 for a single.
The fixed fare for a taxi ride to the city centre (inside the Aurelian Walls) is € 30, according to the official agreement between Roman taxi driver associations and Rome municipality. It is advisable to negotiate the total price including luggage supplements before boarding the taxi. Rental cars are available in the airport terminal from all the usual companies.

HOW TO GET TO THE MEETING VENUE

• From Termini Rail Station:

By taxi – We recommend you to only use licensed taxis available outside the station.
Telephone number main taxis companies:
06 - 3570 Radio Taxi
06 - 5551 Samarcanda
06 - 4994 La Capitale
By public transport - Arriving from Termini Railways Station - BUS 64 stop at Lgt. Sassia (S.Spirito Hospital) - 350 metres walking

• From Leonardo da Vinci Airport:

By taxi - We recommend you to only use licensed taxis available outside the station.
Telephone number main taxis companies:
06 - 3570 Radio Taxi
06 - 5551 Samarcanda
06 - 4994 La Capitale
By public transport - Follow the signs for "Station" of Leonardo express.
Take the train for Stazione Termini and get off at the Station. From this station there will be 350 metres walking

• From Ciampino Airport:

We advice to take a taxi available outside the airport.

TRANSPORTATION IN THE CITY

Rome has a very efficient transportation system that services the entire city,
which includes the Metro network as well as buses, trains and taxis.

ORGANISING SECRETARIAT

Please do not hesitate to contact the Organising Secretariat if you require any additional information or assistance. Please address all correspondence to:

:e MEETING&CONSULTING

Via Michele Mercati, 33, 00197 Rome, Italy
Phone +39 06 80693320, Fax +39 06 3231136
E-mail: probiotics2015@emec-roma.com
Website: www.probiotics-prebiotics-newfood.com

ORGANISING SECRETARY DESK AT THE MEETING VENUE WILL BE OPEN AS FOLLOWS:

DAY	DATE	FROM	TO
Sunday	September 13	8.30 a.m.	7.00 p.m.
Monday	September 14	8.00 a.m.	7.00 p.m.
Tuesday	September 15	8.00 a.m.	3.00 p.m.

ORAL COMMUNICATIONS

Oral communications sessions are scheduled as follows:

September 15, 2015 AULA C from 08.30 a.m. to 1.00 p.m.

POSTERS

Poster authors are kindly requested to hang the poster in the poster area from 10.30 a.m. on September 13 and remove it after 1.00 p.m. on September 15. Your position will be indicated in the poster area

SLIDE CENTERS

All speakers and authors must deliver their presentation (CD Rom, USB) to the slide centers 2 hours in advance or the day before their speech

ITALIAN CME ACCREDITATION ECM (*Italian CME Certificate*)

e meeting&consulting in qualità di Provider standard ha accreditato:

• **8th Probiotics, Prebiotics & New Foods - for microbiota for human health per le seguenti categorie:**
Medico Chirurgo - discipline: Gastroenterologia; Medicina Interna; Pediatria; Ginecologia e Ostetricia; Microbiologia e Virologia; Medicina Generale (Medici di Famiglia); Pediatria (Pediatri di Libera Scelta).
Biologo
Dietista
Infermiere
Infermiere pediatrico

Rif. n. 134203 - Crediti assegnati 10,5

Per aver diritto ai crediti ECM è necessario frequentare il 100% delle ore di formazione e superare il test di apprendimento.

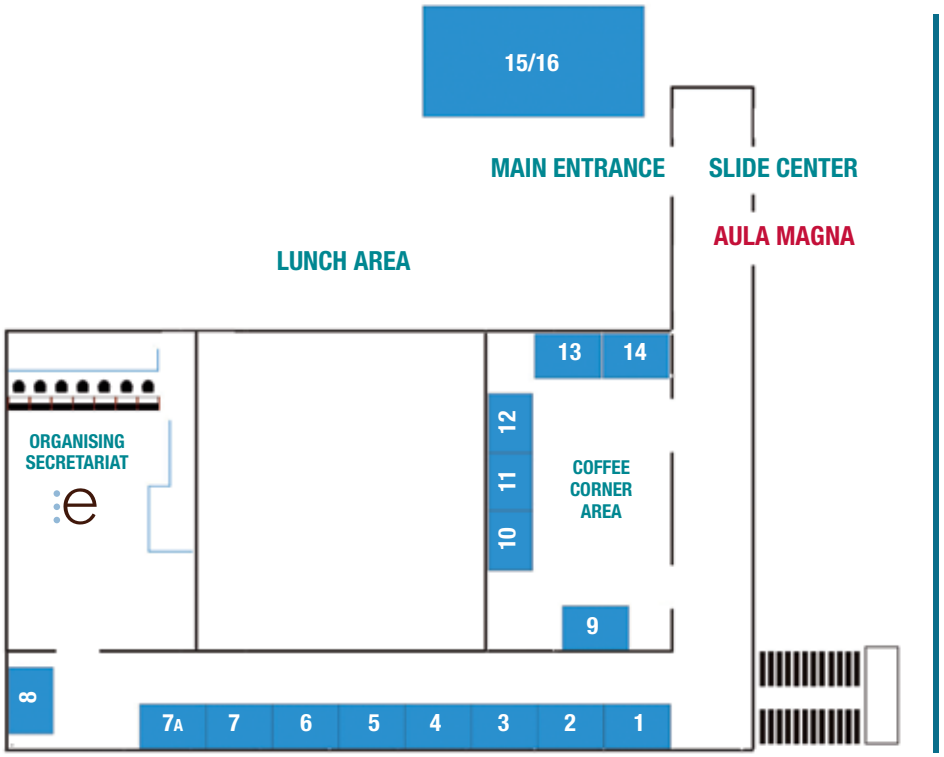
Gli attestati riportanti i crediti ECM, dopo attenta verifica della partecipazione e dell'apprendimento, saranno inviati on-line dopo la chiusura dell'evento.

THE MEETING WAS MADE POSSIBLE THANKS TO THE CONTRIBUTION PROVIDED BY:

MAJOR SPONSOR

&

FLOOR PLAN - LEVEL I



EXHIBITORS

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2) _____
3) _____
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7) _____
7A) _____
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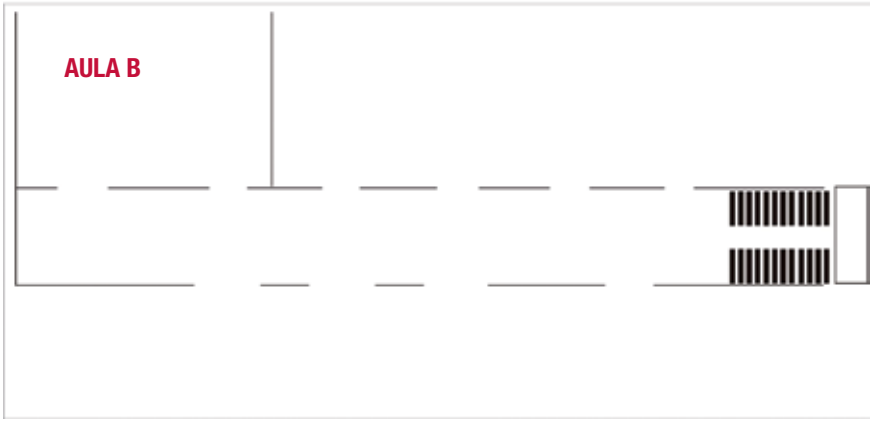
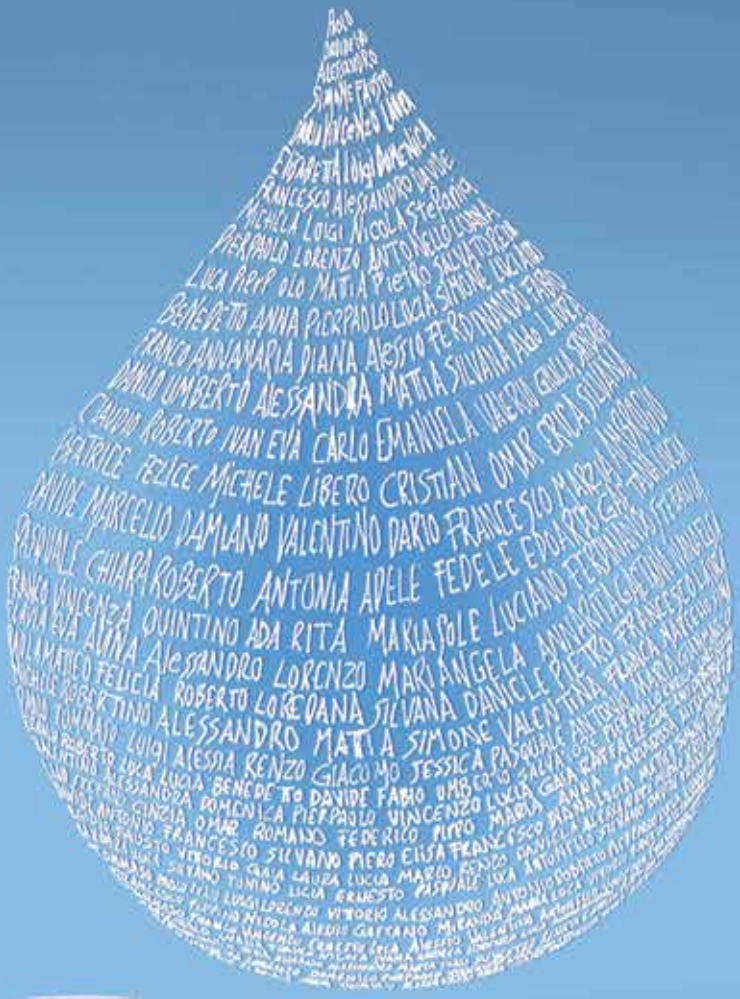
FLOOR PLAN - FIRST LEVEL



FLOOR PLAN - GROUND LEVEL



Abbiamo un latte di qualità per ognuno di voi.

Parmalat ha dedicato al latte tanta energia, migliorandolo con l'esperienza ed il lavoro. E per dare a ciascuno di noi la possibilità di scegliere, ne ha creato uno per ogni esigenza, mantenendolo sicuro e garantito attraverso un'accurata selezione delle materie prime in base a severi standard qualitativi e oltre un milione di rigorosi controlli all'anno, che lo rendono di assoluta qualità e fiducia. Parmalat è il buon latte che esaudisce i gusti e le necessità di tutti, anche in termini di qualità e sicurezza.

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il latte oggi.