SESSIÓ CIENTFICA DEL CCNIEC 2025

HOT TOPICS I AVENÇOS EN NUTRICIÓ

Barcelona, 23 de maig de 2025

Institut d'Estudis Catalans. C. del Carme, 47 08001 Barcelona – Sala Pere i Joan Coromines

Organització: CCNIEC

LLIBRE D'ABSTRACTS

SESSIÓ CIENTFICA DEL CCNIEC 2025
HOT TOPICS I AVENÇOS EN NUTRICIÓ

Barcelona, 23 de maig de 2025

Institut d’Estudis Catalans. C. del Carme, 47 08001 Barcelona – Sala Pere i Joan Coromines

Organització: CCNIEC

LLIBRE D’ABSTRACTS

COMUNICACIONS ORALS

COMUNICACIÓ ORAL 1.

Ponent: Jiaqi Ni - jiaqi.ni@urv.cat

THE GUT MICROBIOTA MEDIATES THE ASSOCIATIONS OF OLIVE OIL CONSUMPTION WITH CHANGES IN COGNITIVE FUNCTION. Ni J, Nishi SK, Babio N, Belzer C, Vioque J, Corella D, Hernando-Redondo J, Vidal J, Moreno-Indias I, Compañ-Gabució L, Coltell O, Fitó M, Toledo E, Wang DD, Tinahones FJ, Salas-Salvadó J.

GRUP DE RECERCA CCNIEC: ALIMENTACIÓ, NUTRICIÓ, DESENVOLUPAMENT I SALUT MENTAL (ANUT-DSM)
Facultat de Medicina de Reus, Universitat Rovira i Virgili (Reus)
WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-nutricio-alimentacio-creixement-i-salut-mental-nutcrsm/

Filiació:

Jiaqi Ni[1,2,3], Stephanie K. Nishi[1,2,3,4,5], Nancy Babio[1,2,3], Clara Belzer[6], Jesús Vioque[7,8], Dolores Corella[3,9], Javier Hernando-Redondo[3,10], Josep Vidal[11,12], Isabel Moreno-Indias[3,13], Laura Compañ-Gabucio[7,8], Oscar Coltell[3,14], Montse Fitó[3,10], Estefanía Toledo[3,15], Dong D. Wang[16,17,18], Francisco J. Tinahones[3,13], Jordi Salas-Salvadó[1,2,3].

[1]Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Alimentació, Nutrició, Desenvolupament i Salut Mental ANUT-DSM, Reus, Spain; [2]Alimentació, Nutrició, Desenvolupament i Salut Mental, Institut d'Investigació Sanitària Pere Virgili (IISPV), Reus, Spain; [3]Centro de Investigación Biomédica en Red Fisiopatología de La Obesidad y La Nutrición (CIBEROBN), Instituto de Salud Carlos III, Madrid, Spain; [4]Toronto 3D (Diet Digestive Tract and Disease) Knowledge Synthesis and Clinical Trials Unit, Toronto, Canada; [5]Clinical Nutrition and Risk Factor Modification Centre, St. Michael's Hospital, Unity Health Toronto, Toronto, Canada; [6]Laboratory of Microbiology, Wageningen University & Research, Wageningen, the Netherlands; [7]CIBER de Epidemiología y Salud Pública (CIBERESP), Instituto de Salud Carlos III, Madrid, Spain; [8]Instituto de Investigación Sanitaria y Biomédica de Alicante. Universidad Miguel Hernández (ISABIAL-UMH), Alicante, Spain; [9]Department of Preventive Medicine, University of Valencia, Valencia, Spain; [10]Unit of Cardiovascular Risk and Nutrition, Institut Hospital del Mar de Investigaciones Médicas Municipal d'Investigació Médica (IMIM), Barcelona, Spain; [11]CIBER Diabetes y Enfermedades Metabólicas (CIBERDEM), Instituto de Salud Carlos III (ISCIII), Madrid, Spain; [12]Department of Endocrinology, Institut d'Investigacions Biomédiques August Pi Sunyer (IDIBAPS), Hospital Clinic, University of Barcelona, Barcelona, Spain: [13]Department of Endocrinology and Nutrition, Virgen de la Victoria University Hospital, the Biomedical Research Institute of Malaga and Platform in Nanomedicine (IBIMA-BIONAND Platform), University of Malaga, Malaga, Spain; [14]Department of Computer Languages and Systems, University Jaume I, Castellón, Spain; [15]Department of Preventive Medicine and Public Health, University of Navarra, Instituto de Investigación Sanitario de Navarra (IdiSNA), Pamplona, Spain; [16] Channing Division of Network Medicine, Department of Medicine, Brigham and Women's Hospital and Harvard Medical School, Boston, MA, USA; [17] Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, USA; [18] Broad Institute of MIT and Harvard, Cambridge, MA, USA

Background and Aims: The relationship between olive oil consumption, gut microbiota, and changes in cognitive function remains poorly understood. We aim to investigate this interplay in older adults who are at high risk of cognitive decline.

Methods: 656 participants aged 55-75y with overweight/obesity and metabolic syndrome provided stool samples and completed a validated semi-quantitative food frequency questionnaire at baseline and an extensive neuropsychological battery of tests at baseline and at the 2-year follow-up. Stool microbial DNA were sequenced to profile alpha and beta diversity, and genus-level taxonomy. Linear regression models assessed associations between total and different varieties of olive oil consumption and changes in composite cognitive scores across global, general, executive function, attention, and language domains; associations of olive oil consumption with gut microbial composition at baseline; and the associations between olive oil-related gut microbiota signatures and cognitive function changes. Mediation analyses examined whether the association between olive oil consumption and cognitive function changes was partially explained by gut microbiota composition.

Results: Higher virgin olive oil (VOO) consumption associated with improved cognitive function over 2-y follow-up and more diverse gut microbiota overall structure at baseline. Conversely, increased consumption of common olive oil varieties linked to accelerated cognitive decline and lower alpha diversity. Several olive oil-related taxa showed prospective associations with changes in cognitive function. Mediation analysis suggests gut microbiota, particularly *Adlercreutzia*, may serve as a mediator taxon in the association between VOO consumption and changes in general cognitive function.

Conclusions: Our study provides novel insights into the complex interplay between olive oil consumption, gut microbiota, and changes in cognitive function. Higher consumption of VOO was associated with cognitive preservation, possibly mediated by favorable alterations in gut microbiota composition. These findings underscore the potential of microbiota-targeted dietary strategies to promote cognitive health in aging populations, though further studies are warranted.

COMUNICACIÓ ORAL 2.

Ponent: Tomas Meroño - tomasmerono@ub.edu

GENDER DIFFERENCES IN THE ASSOCIATIONS BETWEEN LIFESTYLE, INTESTINAL PERMEABILITY AND BRAIN HEALTH IN MIDDLE-AGED ADULTS. Tume R, Cattaneo G, Carmona-Pontaque F, Solana-Sánchez J, Unión-Caballero A, Cubedo M, Guadall A, Rabassa M, Martínez-Huelamo M, Bartrés-Faz D, Andrés-Lacueva C, Meroño T.

GRUP DE RECERCA CCNIEC: BIOMARCADORS I METABOLÒMICA NUTRICIONAL DELS ALIMENTS

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-biomarcadors-i-metabolomica-nutricional-dels-aliments/

Filiació:

Tume R[1,2], Cattaneo G[3,4,5], Carmona-Pontaque F[6], Solana-Sánchez J[3,4,5], Unión-Caballero A[1], Cubedo M[6], Guadall A[1,2], Rabassa M[1,2], Martínez-Huelamo M[1,2], Bartrés-Faz D[3,7,8], Andrés-Lacueva C[1,2], Meroño T[1,2].

[1]Biomarkers and Nutrimetabolomics Laboratory, Department of Nutrition, Food Sciences and Gastronomy, Faculty of Pharmacy and Food Sciences, Nutrition and Food Safety Research Institute (INSA-UB), University of Barcelona, 08028 Barcelona, Spain; [2]Centro de Investigación Biomédica en Red Fragilidad y Envejecimiento Saludable (CIBERFES), Instituto de Salud Carlos III, Madrid, 28029, Spain; [3]Institut Guttmann, Institut Universitari de Neurorehabilitació Adscrit a la UAB, Badalona, Spain; [4]Universitat Autònoma de Barcelona, Bellaterra, Spain; [5]Fundació Institut d'Investigació en Ciències de la Salut Germans Trias i Pujol, Barcelona, Spain.; [6]Department of Genetics, Microbiology and Statistics, University of Barcelona, 08028, Barcelona, Spain; [7]Departament de Medicina, Facultat de Medicina i Ciències de la Salut, Institut de Neurociències, Universitat de Barcelona; [8]Institut de Recerca Biomèdica August Pi i Sunyer (IDIBAPS), Barcelona.

BACKGROUND: Many brain disorders are associated with alterations in intestinal function. Intestinal permeability (IP) as a risk factor for brain health in middle-aged adults has not been studied.

AIM: To evaluate the association between IP and brain health (cognitive, psychiatric, serum neurofilament light-chain (NfL) levels and MRI measurements) in a middle-aged cohort of healthy men and women.

METHODS: 827 participants from the Barcelona Brain Health Innitiative (BBHI) study were analyzed (median age 52y, 427 males). IP was evaluated by levels of lipopolysaccharide-binding protein (LBP), zonulin and sCD-14. Brain health included a cognitive and psychometric (DASS) evaluation, NfL levels and hippocampus, white matter and cortex volume (MRI). Covariates were clinical variables, physical exercise, sleep, nutrition, social interactions, and life purpose. Integrative analyses included multiple factor analysis. Diagnosis of neurodegenerative, psychiatric and a 17-diseases composite-endpoint during a 4-year follow-up were also analyzed.

RESULTS: An inverse association between zonulin and some cognitive tests, and between LBP and DASS scores were observed mainly in females. In males, LBP was inversely associated with cognitive tests and with right hippocampus volume. Integrative analyses revealed that IP combined with lifestyle factors were associated with MRI-signatures of brain aging and NfL levels. Last, only in women dimensions integrating IP were associated with both higher and lower odds for the diagnosis of neurodegenerative diseases (OR, 95%CI: 2.0, 1.4-3.1; and 0.6, 0.4-0.9, respectively).

COMUNICACIÓ ORAL 3.

Ponent: Hernando J Margara-Escudero - hernandojoaquin.margara@urv.cat

NEUROLOGY-RELATED AND INFLAMMATORY PLASMA PROTEINS AS PREDICTORS OF COGNITIVE DECLINE AND ITS MODULATION BY LIFESTYLE INTERVENTIONS IN OLDER ADULTS WITH METABOLIC SYNDROME. Margara-Escudero HJ, Paz-Graniel I, García-Gavilán JF, Fitó M, Bralten J, Matura S, Glennon JC, Schiweck C, Vilella E, Santos-Lozano JM, Babio N, Salas-Salvadó J.

GRUP DE RECERCA CCNIEC: ALIMENTACIÓ, NUTRICIÓ, DESENVOLUPAMENT I SALUT MENTAL (ANUT-DSM)

Facultat de Medicina de Reus, Universitat Rovira i Virgili (Reus)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-nutricio-alimentacio-creixement-i-salut-mental-nutcrsm/

Filiació:

Hernando J Margara-Escudero[1,2,3], Indira Paz-Graniel[1,2,3,4], Jesús F. García-Gavilán[1,2,3], Montse Fitó[3,4], Janita Bralten[5,6], Silke Matura[7], Jeffrey C. Glennon[8], Carmen Schiweck[9], Elisabet Vilella[10,11,12], José Manuel Santos-Lozano[13,2], Nancy Babio[1,2,3], and Jordi Salas-Salvadó[1,2,3].

[1]Universitat Rovira i Virgili, Departament de Bioquímica i Biotecnologia, Alimentació, Nutrició, Desenvolupament i Salut Mental (ANUT-DSM), Unitat de Nutrició Humana, Reus, Spain. [2]Institut d'Investigació Sanitària Pere Virgili (IISPV), Alimentació, Nutrició, Desenvolupament i Salut Mental, Reus, Spain. [3]Centro de Investigación Biomédica en Red Fisiopatología de la Obesidad y la Nutrición (CIBEROBN), Instituto de Salud Carlos III, Madrid, Spain. [4]Unit of Cardiovascular Risk and Nutrition, Institut Hospital del Mar de Investigaciones Médicas Municipal d'Investigació Médica (IMIM), Barcelona, Spain. [5]Department of Human Genetics, Radboud University Medical Center, Nijmegen, The Netherlands. [6]Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, The Netherlands. [7]Department of Psychiatry, Psychosomatic Medicine and Psychotherapy, University Hospital, Goethe University Frankfurt, Frankfurt am Main, Germany. [8]Conway Institute of Biomolecular and Biomedical Research, School of Medicine, University College Dublin, Dublin, Ireland. [9]Department of Cognitive Neuroscience, Donders Institute for Brain, Cognition and Behaviour, Radboud University Medical Center, Nijmegen, the Netherlands. [10]Centro Investigación Biomédica en Red de Salud Mental (CIBERSAM), Instituto de Salud Carlos III, Madrid, Spain. [11]Hospital Universitari Institut Pere Mata, Reus, Spain. [12]Institut d'Investigació Sanitària Pere Virgili-CERCA, Universitat Rovira i Virgili, Tarragona, Spain. [13]Departamento de Medicina. Facultad de Medicina. Universidad de Sevilla. Sevilla, Spain.

BACKGROUND AND OBJECTIVES: Cognitive decline (CD) is an age-related process exacerbated by metabolic syndrome (MetS), while diminished by lifestyle interventions. Plasma biomarkers hold promise for early CD detection, but prospective evidence is limited. Therefore, we aimed to prospectively determine associations between peripheral neurology-related proteins and CD, and to assess whether a weight-loss lifestyle intervention could modify these associations.

MATERIAL AND METHODS: A 6-year observational study including 314 PREDIMED-Plus participants with MetS (mean age: 65 years, 44% women) were randomised to an intensive weight-loss lifestyle intervention or a control group. Plasma neurological and inflammatory proteins were quantified using proximity extension assay (OLINK neurology panel, n=92), ELISA (C-reactive protein, amyloid-beta 40, phosphorylated tau 231 and adiponectin) and Luminex (interleukin-6). An internal validation was conducted with proteomic data at 3-years of follow-up. Cognitive performance was assessed at baseline, 2, 4, and 6 years using eight validated tests. Elastic net regression identified protein signatures for global cognitive function (GCF) and three cognitive domains. Multivariable linear mixed models were used to estimate the associations of proteomic signatures with CD and to assess interaction effects with the PREDIMED-Plus intervention.

RESULTS: Distinct baseline protein signatures, including 18, 18, 16, and 17 proteins, were identified GCF, attention, executive function, and general cognitive function (GenCF), respectively. Of these, seven proteins (RSPO1, CD200, EDA2R, VWC2, GDNF, CD38, and ADAM23) were consistently associated across all cognitive domains. From baseline to year 6, protein signatures of GCF and GenCF were significantly associated with CD, with PREDIMED-Plus interventions modulating these associations only for GCF (P=0.01).

CONCLUSIONS: This study identified protein signatures associated with CD and suggests that a weight-loss, an energy-reduced Mediterranean diet and physical activity, may mitigate potential deleterious effects of this protein signature on CD in older adults with MetS.

COMUNICACIÓ ORAL 4.

Ponent: Luisa Torres-Laiton - ltorresl@idibell.cat

DIABETES-RELATED DIETARY PATTERNS AND ENDOMETRIAL CANCER RISK AND SURVIVAL IN THE EPIC STUDY. Torres-Laiton L, Luján-Barroso L, Nadal Zaragoza N, Castro-Espin C, Jakszyn P, Panico C, le Cornet C, Dahm CC, Petrova D, Rodríguez-Palacios DA, Jannasch F, Masala G, Dossus L, Padroni L, Guevara M, Schulze MB, Turzanski-Fortner R, Tumino R, Crous-Bou.

GRUP DE RECERCA CCNIEC: UNITAT DE NUTRICIÓ, MEDI AMBIENT I CÀNCER (UNAC)

Institut Català d'Oncologia – IDIBELL (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-unitat-de-nutricio-medi-ambient-i-cancer-unac/

Filiació:

Luisa Torres-Laiton[1,2], Leila Luján-Barroso[1,3], Núria Nadal Zaragoza[1,2], Carlota Castro-Espin[1,14], Paula Jakszyn[1,4], Camilla Panico[5], Charlotte le Cornet[6], Christina C. Dahm[7], Dafina Petrova[8,9,10,11], Daniel-Angel Rodrí-guez-Palacios[11,18], Franziska Jannasch[12], Giovanna Masala[13], Laure Dossus[14], Lisa Padroni[15], Marcela Guevara[11,16,17], Matthias B. Schulze[12,19], Renée Turzanski-Fortner[6,20], Rosario Tumino[21], Marta Crous-Bou[1,22].

[1] CCNIEC Research Group. Unit of Nutrition and Cancer. Catalan Institute of Oncology – Bellvitge Biomedical Research Institute (ICO-IDIBELL). L'Hospitalet de Llobregat, Barcelona, Spai; [2] Department of Nutrition, Food Science and Gastronomy. Faculty of Pharmacy and Food Sciences. Uni-versity of Barcelona. Barcelona, Spain; [3] Department of Public Health, Mental Health and Maternal and Child Health Nursing. Faculty of Nursing. University of Barcelona. Barcelona, Spain; [4] Blanquerna School of Health Sciences, Ramon Llull University. Barcelona, Spain; [5] Fondazione Policlinico Gemelli. Rome, Italy.; [6] Division of Cancer Epidemiology, German Cancer Research Center (DKFZ), Heidelberg, Germany; [7] Department of Public Health. Aarhus University. Aarhus, Denmark; [8] Escuela Andaluza de Salud Pública (EASP). Granada, Spain; [9] Instituto de Investigación Biosanitaria ibs. GRANADA. Granada, Spain; [10] Medical Oncology, Hospital Universitario Virgen de las Nieves. Granada, Spain; [11] CIBER in Epidemiology and Public Health (CIBERESP). Madrid, Spain; [12] Department of Molecular Epidemiology, German Institute of Human Nutrition Potsdam-Rehbruecke.. Nuthetal, Germany; [13] Clinical Epidemiology Unit, Institute for cancer research, prevention and clinical network (ISPRO). Florence, Italy; [14] International Agency for Research of Cancer. Lyon, France; [15]Department of Clinical and Biological Science, University of Turin. Regione Gonzole, Italy; [16] Instituto de Salud Pública y Laboral de Navarra. Pamplona, Spain. [17] Navarra Institute for Health Research (IdiSNA). Pamplona, Spain; [18] Department of Epidemiology, Regional Health Council, IMIB-Arrixaca. Murcia, Spain; [19] Institute of Nutritional Science, University of Potsdam, Nuthetal, Germany; [20] Department of Research, Cancer Registry of Norway, Norwegian Institute of Public Health, Oslo, Norway; [21] Hyblean Association for Epidemiology Research, AIRE – ONLUS. Ragusa, Italy: [22] Department of Epidemiology, Harvard T.H. Chan School of Public Health. Boston, USA.

BACKGROUND AND OBJECTIVES: Endometrial cancer (EC) major risk factors include obesity and diabetes, both strongly related with lifestyle choices and dietary factors. We aimed to evaluate the relationship between three dietary patterns associated with diabetes and their impact on EC risk and survival in a large prospective cohort study, the European Prospective Investigation into Cancer and Nutrition (EPIC).

METHODS: A total of 285.418 female participants from EPIC were included in the present analysis. In total 1.955 incident EC cases were registered, of those 380 women died, including 133 from EC. The Empirical Dietary Index for Hyperinsulinemia (EDIH), the Empirical Dietary Index for Insulin Resistance (EDIR), and the Diabetes Risk Reduction Diet (DRRD), were estimated from dietary information collected at baseline. Cox proportional hazards regression models were used to evaluate the association between the diabetes-related paterns and EC risk, using hazard ratios (HR) and 95% confidence intervals (CI), and adjusting for relevant confounders. Cox and Fine-Gray models were used to assess the association with overall and EC-specific mortality respectively.

RESULTS: The mean BMI was 24.7Kg/m² (SD 4.3), EC cases had a higher BMI 26.9Kg/m² (SD 5.3). Higher adherence to EDIR was associated with an increased risk of EC. Multivariable HR_{T3vsT1} were 1.17 (95%CI = 1.04-1.31) for EDIR. However, when BMI was included in the model, these associations attenuated and were no longer statistically significant HR $_{T3vsT1}$1.03 (95%CI = 0.91-1.16). No associations were observed between EC risk and adherence to EDIH and DRRD. No relevant differences were observed among subgroups. No associations were found in relation to EC mortality.

CONCLUSIONS: Our findings suggest that higher adherence to a diabetes-related dietary pattern (especially related to insulin resistance) might have an impact on EC risk. BMI appears to explain these association. Specific recommendations encouraging women to maintain a healthy body composition through lifestyle changes may help reduce the incidence of EC.

OMUNICACIÓ ORAL 5.

Ponent: Janna Wordsworth - jannaruby.wordsworth@ssib.es

CHANGES IN QUALITY OF LIFE OF CANCER SURVIVORS WITH A PERSONALIZED LIFESTYLE INTERVENTION. Wordsworth J, Prohens L, Fernández J, Freites R; Guillot M, Gutiérrez A, Romaguera D, Chaplin A.

GRUP DE RECERCA CCNIEC: EPIDEMIOLOGIA NUTRICIONAL I FISIOPATOLOGIA CARDIOVASCULAR (NUTRECOR)

Institut d'Investigació Sanitària Illes Balears (IdISBa) i CIBER Fisiopatología de la Obesidad y Nutrición (CIBEROBN)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/nutrecor_idisba/

Filiació:

Janna Wordsworth[*1]; Lara Prohens[1]; Jon Fernandez[1], Rebeca Freites[2]; Mónica Guillot[3]; Antonio Gutiérrez[4]; Dora Romaguera[1,5], Alice Chaplin[1, 5].

[1]Grup de Recerca CCNIEC: Epidemiologia Nutricional i Fisiopatologia Cardiovascular (NUTRECOR), Fundació Institut d'Investigació Sanitària de les Illes Balears (IdiSBa), Palma, Espanya; [2] Servei de Farmàcia, Hospital Universitari Son Espases, Palma, Espanya; [3] Servei Oncologia, Hospital Universitari Son Espases, Palma, Espanya; [4]Servei Hematologia, Hospital Universitari Son Espases, Palma, Espanya; [5]Consorci CIBER, M.P. Fisiopatologia de la Obesitat i Nutrició, Madrid, Espanya;

BACKGROUND: With rising cancer survivorship rates, there is a need for high-quality care to address lifestyle factors which could influence quality of life (QoL) and prognosis. With this in mind, more studies are required to evaluate the impact of lifestyle interventions in QoL of people living with and beyond cancer (PLWBC). Our aim was to carry out a pilot complex lifestyle intervention (considering diet, physical activity, and mental health) and determine its impact on QoL in PLWBC.

METHODS: A total of 105 cancer survivors were recruited at a University Hospital and randomly assigned to either the intervention (INT) or the control (CT) group. CT participants received general recommendations based on guidelines from the World Cancer Research Fund, American Institute for Cancer Research, and American Cancer Society. INT participants received these recommendations plus personalized consultations with an oncology dietitian, a physical activity trainer, and a psychologist, along with a group session. The intervention lasted three months. Participants completed the EORTC QLQ-C30 questionnaire to assess their "global health status" and the "QLQ-30 summary score" (both with ranges 0-100), at baseline and post-intervention. Changes in "global health status" and "QLQ-C30 summary score" were analyzed using the Mann-Whitney U test.

RESULTS: The study included 64% women, mean age 57.9±12 years. Diagnoses included breast (39.1%), colorectal (27.6%), lymphoma (13.33%), head and neck (5.7%), and other cancers (14.3%). Mean time since finishing treatment was 2.86±2.65 years. Baseline median scores were 83.33 for "global health status" and 84.64 for overall QLQ-C30 score. After three months, INT participants improved in "global health status" (median change of score: 8.3 INT vs. 0 CT; p=0.04 and overall QLQ-C30 score: 3.0 INT vs. -0.2 CT; p=0.06).

CONCLUSIONS: These findings support a personalized, multifactorial approach over generalized recommendations for improving self-perceived global health status and overall QoL in PLWBC. This pilot study lays the groundwork for future lifestyle interventions for cancer survivorship care.

COMUNICACIÓ GUADONADA AMB EL PREMI A LA MILOR COMUNICACIÓ ORAL

COMUNICACIÓ ORAL 6.

Ponent: Sara Castro-Barquero - sara.castro@ub.edu

ULTRA-PROCESSED FOODS CONSUMPTION AND RISK OF PREECLAMPSIA. A SECONDARY ANALYSIS OF THE IMPACT BCN RANDOMIZED CLINICAL TRIAL. Trejo-Domínguez A, Benítez L, Crovetto F, Casas R, Youssef L, Ruiz-León AM, Nakaki A, Genero m, Casas I, Novoa RH, Encabo N, Gratacós E, Estruch R, Crispi F, Castro-Barquero S.

GRUP DE RECERCA CCNIEC: MEDICINA INTERNA
Hospital Clínic de Barcelona (Barcelona)
WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-en-medicina-interna/

Filiació:

Alejandra Trejo-Domínguez, Leticia Benitez, Francesca Crovetto, Rosa Casas, Lina Youssef, Ana María Ruiz-León, Ayako Nakaki, Mariona Genero, Irene Casas, Rommy H. Novoa, Noelia Encabo, Eduard Gratacós, Ramon Estruch, Fàtima Crispi, Sara Castro-Barquero.

---

[1]BCNatal | Barcelona Center for Maternal and Fetal Medicine (Hospital Clínic and Hospital Sant Joan de Déu), University of Barcelona [2]Institut de Recerca Sant Joan de Déu, Esplugues de Llobregat, Spain; [3]Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Barcelona, Spain; [4]Primary Care Interventions to Prevent Maternal and Child Chronic Diseases of Perinatal and Development Origin, RD21/0012/0001, Instituto de Salud Carlos III, Barcelona, Spain; [5]Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y Nutrición (CIBEROBN); [6]Institut de Recerca en Nutrició i Seguretat Alimentària (INSA-UB). University of Barcelona, Barcelona, Spain; [7]Department of Internal Medicine Hospital Clinic, University of Barcelona, Barcelona, Spain; [8]Grup de Recerca CCNIEC "Medicina Interna"; [9]Centre for Biomedical Research on Rare Diseases (CIBERER), Barcelona, Spain.

INTRODUCTION AND OBJECTIVE: Preeclampsia is a pregnancy-specific condition and a leading cause of maternal and perinatal morbimortality. While ultra-processed foods (UPF) has been linked to non-communicable chronic diseases, evidence on pregnancy outcomes remains scarce. The aim of this study is to evaluate the association of maternal UPF consumption during pregnancy and the risk of preeclampsia and to assess the influence of maternal lifestyle interventions on UPF consumption during pregnancy.

METHODS: This is an observational prospective post-hoc data analysis of 812 participants enrolled in the IMPACT (Improving Mothers for a better PrenAtal Care Trial BarCeloNa) trial. The main outcome was preeclampsia. Cases of preeclampsia were subdivided into early and late-onset according to gestational age at delivery before or after 34 weeks, respectively. Dietary UPF consumption was assessed using NOVA classification with a validated 151-item food frequency questionnaire and categorized in tertiles of change (final visit at 31-34 weeks of gestation vs baseline visit at 19-23 weeks of gestation) in dietary UPF consumption.

RESULTS: Significant associations between changes in UPF consumption during pregnancy and risk of overall preeclampsia were observed ($OR_{T3 vs T1}$: 2.29 [95% CI 1.06-4.97], p for trend 0.026). Among UPF subclasses, pre-prepared dishes were significantly associated with preeclampsia risk ($OR_{T3 vs T1}$: 2.36 [95% CI 1.09-5.12]). Promoting the Mediterranean diet significantly reduced UPF consumption during pregnancy (Mediterranean diet *vs* control: mean difference -70.1 g/day (95% CI -91.4 to 48.8), and Mediterranean diet *vs* stress reduction: mean difference -74.3 g/day (95% CI -96.1 to -52.5).

CONCLUSION: A higher dietary intake of UPF during pregnancy is associated with a higher risk of preeclampsia, particularly late-onset cases. Promotion of Mediterranean diet might be a useful strategy to reduce maternal UPF consumption during pregnancy.

COMUNICACIÓ GUADONADA AMB EL PREMI A LA MILOR COMUNICACIÓ ORAL

SESSIÓ CIENTFICA DEL CCNIEC 2025
HOT TOPICS I AVENÇOS EN NUTRICIÓ

Barcelona, 23 de maig de 2025
Institut d'Estudis Catalans. C. del Carme, 47 08001 Barcelona – Sala Pere i Joan Coromines
Organització: CCNIEC

LLIBRE D'ABSTRACTS

COMUNICACIONS PÒSTER

COMUNICACIÓ PÒSTER 1.

Presenta: M. Emília Juan - mejuan@ub.edu

DETERMINATION OF POLYPHENOLS IN THE COLONIC CONTENTS OF RATS AFTER THE REPEATED INTAKE OF ARBEQUINA TABLE OLIVES. Moreno-González R, Juan ME, Planas JM.

GRUP DE RECERCA CCNIEC: FISIOLOGIA I NUTRICIÓ EXPERIMENTAL (FINEX)

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-en-nutricio-i-fisiologia/

Filiació:

Moreno-González R, Juan ME, Planas JM.
Departament de Bioquímica i Fisiologia. Facultat de Farmàcia i Ciències de l'Alimentació i Institut de Recerca en Nutrició i Seguretat Alimentària (INSA-UB, María de Maeztu Unit of Excellence). Universitat de Barcelona (UB), Av. Joan XXIII, 27-31, 08028 Barcelona.

INTRODUCTION AND AIMS: Previous studies demonstrated that daily consumption of Arbequina table olives (AO) reduced preneoplastic lesions in a rat model of colon cancer. Although AO are a rich source of bioactive compounds, including polyphenols, it remains unclear whether these compounds reach the colon to exert their chemopreventive effects. Therefore, we developed and validated an analytical method to quantify polyphenols in colonic contents and applied it to samples from rats supplemented with AO.

MATERIAL AND METHODS: Male Sprague-Dawley rats were administered by oral gavage with a suspension of AO (3.85 g/kg/day) (DMH+/Olives+) or water (DMH+/Olives−) for 49 days, and preneoplastic lesions were induced by three subcutaneous injections of 1,2-dimethylhydrazine (DMH). Polyphenols in AO were determined after extraction with methanol-ethanol (50:50, v/v) followed by LC-ESI-MS/MS. Colonic contents were collected, mixed with methanol-water (80:20, v/v) that contained 2-(3-hydroxyphenyl) ethanol as internal standard, then homogenized using a Polytron. Samples were vortex-mixed, centrifuged, and the supernatant was filtered before LC-ESI-MS/MS. The method was validated with blank colonic content spiked with increasing concentrations of 16 polyphenols.

RESULTS: Method validation showed no matrix effect or carryover. LOQ ranged from 0.16 nM (luteolin-7-O-glucoside) to 2.85 nM (*p*-coumaric acid), except for hydroxytyrosol acetate (4.28 nM), tyrosol (6.73 nM), and catechol (16.2 nM). Linearity (0.05–2.00 µM) was adequate (R^2>0.996), and precision and accuracy remained within the ±15% range. In AO, 16 polyphenols were identified, accounting for 1.04 g/kg of destoned olives. Consequently, the animals received a dose of 4.02 mg polyphenol/kg body weight, mainly hydroxytyrosol (1.83 mg/kg), verbascoside (1.29 mg/kg), and luteolin (0.34 mg/kg). In the colonic content, the polyphenol profile differed from that of AO. Of the 16 polyphenols identified in olives, only 9 were detected in the colon, including hydroxytyrosol (3.31 nmol/g), *p*-coumaric acid (1,83 nmol/g), tyrosol (1.43 nmol/g) and vanillic acid (1.12 nmol/g). Caffeic acid, luteolin, apigenin, quercetin, and verbascoside were found at concentrations lower than 1 nmol/g.

CONCLUSIONS: Our findings demonstrate that polyphenols from AO reach the colon and may contribute to their observed chemopreventive effects against colon cancer.

Supported by AGL2013-41188 (MINECO), 2021SGR300 (Generalitat de Catalunya). INSA María de Maeztu Unit of Excellence grant CEX2021-001234-M.

COMUNICACIÓ PÒSTER 2.

Presenta: Camilla Mesirca Prevedello - c.mesircaprevedello@ub.edu

COOKING WITH EVOO: DOES ITS SUPERIORITY OVER OLIVE OIL HOLD? Mesirca Prevedello C, Corrado M, Vallverdú-Queralt A, Lamuela-Raventós RM.

GRUP DE RECERCA CCNIEC: ANTIOXIDANTS NATURALS: POLIFENOLS

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-antioxidants-naturals-polifenols/

Filiació:

Camilla Mesirca Prevedello[1]*, Marina Corrado[1,2], Anna Vallverdú-Queralt[1,2,] Rosa Maria Lamuela-Raventós[1],[2].
[1*] Department of Nutrition, Food Science and Gastronomy, XIA, Faculty of Pharmacy and Food Sciences, Institute of Nutrition and Food Safety (INSA-UB), University of Barcelona, Barcelona, Spain. [2]CIBER Physiopathology of Obesity and Nutrition (CIBEROBN), Institute of Health Carlos III, Madrid, Spain

---

INTRODUCTION AND OBJECTIVE: Extra virgin olive oil (EVOO) is widely recognized for its high content of polyphenols, bioactive compounds that contribute not only to its health-promoting properties but also to its distinctive sensory characteristics such as bitterness and pungency. These phenolic compounds have antioxidant, anti-inflammatory, and cardioprotective effects, making EVOO a key element of the Mediterranean diet. However, the impact of cooking on the stability and bioavailability during digestion of these compounds remains unclear. The aim of this study is to evaluate whether the nutritional and sensory profile of EVOO remains superior to that of regular olive oil (OO) after undergoing thermal treatment and simulated digestion.

MATERIALS AND METHODS: An *in vitro* static gastrointestinal digestion model (INFOGEST) will be used to sequentially simulate the oral (2 minutes), gastric (120 minutes), and intestinal (120 minutes) phases at 37 °C. A 5g sample volume will be used for each condition. After digestion, phenolic compounds will be extracted and analyzed through LC/MS-MS to assess changes in their profile. In parallel, a sensory analysis will be conducted in accordance with UNE-ISO 6658:2019 using a panel of 20 trained tasters (10 men and 10 women). They will evaluate both raw and cooked samples of EVOO and OO, focusing on key attributes such as bitterness, pungency, and overall acceptability.

RESULTS AND CONCLUSIONS: Cooking and digestion are expected to affect the concentration and profile of polyphenols in both oils. However, due to its initially higher phenolic content, EVOO may retain a greater final amount, potentially preserving its nutritional and sensory qualities. The combined analysis of chemical and sensory data will help establish whether EVOO maintains its superior qualities post-cooking, and to what extent its distinctive features persist. These findings may provide valuable insights into the resilience of EVOO's beneficial properties and its role in cooked food applications.

COMUNICACIÓ PÒSTER 3.

Presenta: Meryl Cruz - mcruzb@ub.edu

A COMPREHENSIVE TARGETED METABOLOMICS ASSAY AND ITS APPLICATION TO A DIETARY INTERVENTION STUDY PROFILING CLINICAL METABOLITES IN PLASMA SAMPLES. Cruz M, Martinez-Huélamo M, Guadall Roldan A, Zhang L, Zheng J, Johnson M, Mandal R, Andres-Lacueva C, Wishart DS.

GRUP DE RECERCA CCNIEC: BIOMARCADORS I METABOLÒMICA NUTRICIONAL DELS ALIMENTS

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-biomarcadors-i-metabolomica-nutricional-dels-aliments/

Filiació:

Meryl Cruz[1], Miriam Martinez-Huélamo[1-2], Anna Guadall Roldan[1], Lun Zhang[3], Jiamin Zheng[3], Mathew Johnson[3], Rupasari Mandal[3], Cristina Andres-Lacueva[1-2]*, David S. Wishart[3].

[1] CCNIEC Research Group: Biomarkers and Nutrimetabolomics Group; Department of Nutrition, Food Sciences and Gastronomy; Nutrition and Food Safety Research Institute (INSA); Faculty of Pharmacy and Food Sciences, University of Barcelona, Barcelona, 08028, Spain. [2]Centro de Investigación Biomédica en Red de Fragilidad y Envejecimiento Saludable (CIBERFES), Instituto de Salud Carlos III, Madrid, Spain. [3]Department of Biological Sciences, University of Alberta, Edmonton, T6G 2E8, Alberta, Canada.

INTRODUCTION AND OBJECTIVES: Metabolomics is a powerful tool for studying the interaction between genetics and exposome factors in human health. Due to the complexity of the human metabolome, novel methodologies are needed. This work shows the validation of a liquid chromatography coupled with tandem mass spectrometry (LC-MS/MS) based targeted metabolomics assay to analyze plasma samples and its application to explore novel biomarkers of cognitive decline and evaluate the mediterranean diet and probiotic supplementation.

MATERIALS AND METHODS: The methodology enables a simultaneous characterization of 721 metabolites covering 20 different analyte groups. The assay uses two chemical derivatizations: phenyl isothiocyanate for amino acids, biogenic amines and lipids and 3-nitrophenylhydrazine for organic acids. Analysis is conducted using a reverse-phase UHPLC-6500 QTRAP system and/or direct flow injection MS (DFI-MS) in both positive and negative ionization modes to separate metabolites across four methods: Panel A (amino acids, biogenic amines), Panel B (organic acids), and DFI 1 and DFI 2 (lipids) methods are analyzed. Data quantification is performed via a web-based tool, providing analysis and reporting within a few hours.

RESULTS: This method satisfactorily validated parameters such as limits of quantification and detection, and intraday and interday precision. Also, it was successfully applied to a Mediterranean dietary intervention study. Results from the t-tests revealed 21 statistically significant (*p-value* < 0.05) metabolites like beta-alanine, ceramides, glucosylceramides, triglycerides, and phosphatidylcholine that showed significant decreases in concentrations after the dietary intervention. Further exploration of the data could provide more insights into metabolites linked to cognitive decline and brain health.

CONCLUSION: This assay permits a more affordable, accessible, and automatable comprehensive quantitative metabolomics analysis that can be applied to large-scale clinical and nutritional studies. To demonstrate its utility in clinical metabolomics studies with real samples, application to multiple samples collected from a dietary intervention study showed that it could yield interesting and meaningful results.

COMUNICACIÓ PÒSTER 4.

Presenta: Francesc M Campins Machado - francesc.campins@ub.edu

INVESTIGATING THE METABOLOMIC SHIFTS IN EXTRA VIRGIN OLIVE OIL THROUGH DIFFERENT COOKING TECHNIQUES. Campins-Machado FM, Abarca-Rivas C, Illán-Villanueva M, Torrado-Prat X, Pérez M, Lamuela-Raventós RM, Vallverdú-Queralt A.

GRUP DE RECERCA CCNIEC: ANTIOXIDANTS NATURALS: POLIFENOLS

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-antioxidants-naturals-polifenols/

Filiació:

Francesc M. Campins-Machado[1,2], Clara Abarca-Rivas[1,2,3], Montserrat Illán-Villanueva[1], Xavier Torrado-Prat[1], Maria Pérez[1,2,3], Rosa M. Lamuela-Raventós[1,2,3], Anna Vallverdú-Queralt[1,2,3].

[1]Grup de Recerca CCNIEC "Antioxidants Naturals: Polifenols", Departament de Nutrició, Ciències de l'Alimentació i Gastronomía, Facultat de Farmacia i Ciències de l'Alimentació, Universitat de Barcelona (UB), Av. de Joan XXIII 27-31, 08028 Barcelona, Spain; [2]Institut de Nutrició i Seguretat Alimentària (INSA), Universitat de Barcelona (UB), 08921 Santa Coloma de Gramanet, Spain; [3]CIBER Fisiopatología de la Obesidad y Nutrición (CIBEROBN), Instituto de Salud Carlos III, 28029 Madrid, Spain.

BACKGROUND & OBJECTIVES: Extra virgin olive oil (EVOO) constitutes the primary source of dietary fat and one of the fundamental components of the Mediterranean Diet (MedDiet). A significant proportion of the health-promoting effects attributed to the MedDiet are linked to the consumption of EVOO, which is rich in bioactive compounds such as polyphenols. EVOO is predominantly consumed raw, although it is also used in various culinary preparations. The present study aims to evaluate the metabolomic shifts occurring in EVOO when exposed to different domestic cooking methods.

MATERIALS & METHODS: The olive oil samples from the same batch and produced through a varietal coupage, were kindly provided by Mateo, S.A. Three domestic cooking techniques were compared: confit in a pot, conventional frying using a stainless-steel pan, and air frying with a commercial air fryer. The resulting samples, along with uncooked controls, were analyzed using ultra-high-performance liquid chromatography coupled to high-resolution mass spectrometry (UHPLC-HRMS). Principal component analysis (PCA) performed on the putatively identified compounds allowed for the evaluation of chemical differences across the applied cooking techniques.

RESULTS: The untargeted metabolomic analysis performed using UHPLC-HRMS enabled the identification of 30 compounds in the EVOO samples. PCA allowed the differentiation of the samples according to the cooking technique applied. Confit cooking resulted in the least chemical alterations compared to the raw uncooked controls, followed by conventional frying. Air frying led to the most pronounced differences. The compounds that contributed most significantly to the differentiation among samples were predominantly phenols, as well as alcohols, aldehydes, and ketones.

CONCLUSIONS: Our results demonstrate that confit is a less aggressive cooking technique than conventional frying, and especially air frying, which proved to be the method that caused the most pronounced chemical alterations in phenolic compounds and generated the highest levels of oxidation and/or degradation products in EVOO.

COMUNICACIÓ PÒSTER 5.

Presenta: Anallely López-Yerena - alopezy@recerca.clinic.cat

EFFECTS OF A LOW-CALORIE MEDITERRANEAN DIET ON INFLAMMATORY MARKERS OF ATHEROSCLEROTIC PLAQUE INSTABILITY IN OLDER ADULTS WITH METABOLIC SYNDROME: A 12-MONTH ANALYSIS FROM THE PREDIMED-PLUS STUDY. López-Yerena A, Casas R, Ruiz-León AM, Casanovas F, Camafort M, Lamuela Raventós RM, Fitó M, Martínez-González MA, Salas-Salvadó J, Estruch R.

GRUP DE RECERCA CCNIEC: MEDICINA INTERNA

Hospital Clínic, Institut d'Investigació Biomèdica August Pi i Sunyer, Universitat de Barcelona, Barcelona, Spain;

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-en-medicina-interna/

GRUP DE RECERCA CCNIEC: ANTIOXIDANTS NATURALS: POLIFENOLS

Universitat de Barcelona (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-antioxidants-naturals-polifenols/

GRUP DE RECERCA CCNIEC: RISC CARDIOVASCULAR I NUTRICIÓ

Hospital del Mar Research Institute / CIBERobn

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-risc-cardiovascular-i-nutricio/

Filiació:

Anallely López-Yerena[1,2], Rosa Casas[1,2,3], Ana María Ruiz-León[1,2,3], Francesc Casanovas[1], Miguel Camafort[1,2], Rosa M. Lamuela Raventós[1,3,4], Montse Fitó[1,5], Miguel A. Martínez-González[1,6,7,8], Jordi Salas-Salvadó[1,9], and Ramon Estruch[1,2,3] .

---

[1]CIBER de Fisiopatología de la Obesidad y la Nutrición (CIBEROBN 0603), Instituto de Salud Carlos III, Madrid, Spain; [2]Grup de Recerca CCNIEC "Medicina interna", Department of Internal Medicine, Hospital Clínic, Institut d'Investigació Biomèdica August Pi i Sunyer, Universitat de Barcelona, Barcelona, Spain; [3]Institut de Recerca en Nutrició i Seguretat Alimentaria (INSA-UB). University of Barcelona, Barcelona, Spain: [4]Grup de Recerca CCNIEC "Polyphenol Research Group", Departament de Nutrició, Ciències de l'Alimentació i Gastronomía, Facultat de Farmacia, Universitat de Barcelona (UB), Av. de Joan XXII, 27-31, Barcelona, 08028, Spain; [5]Grup de recerca CCNIEC "Risc cardiovascular i nutrició", Unidad de Riesgo Cardiovascular y Nutrición, Instituto Hospital del Mar de Investigaciones Médicas (IMIM), Barcelona, Spain; [6]Instituto de Investigación Sanitaria de Navarra (IdiSNA), Navarra, Pamplona, Spain; [7]Universidad de Navarra, Departamento de Medicina Preventiva y Salud Pública, Navarra, Pamplona, Spain; [8]Department of Nutrition, Harvard T.H. Chan School of Public Health, Boston, MA, United States; [9]Grup de recerca CCNIEC "Alimentació, nutrició, desenvolupament i salut mental", Instituto de Investigación Sanitaria Pere i Virgili, Departamento de Bioquímica y Biotecnología, Unidad de Nutrición Humana Universidad Rovira i Virgili, Tarragona, Reus, Spain.

BACKGROUND AND OBJECTIVES: The presence and activity of inflammatory cells in atherosclerotic plaques are critical factors in determining plaque vulnerability and, consequently, in assessing overall cardiovascular risk. The primary outcome measures in this sub-study were 12-month changes in traditional cardiovascular risk factors and inflammatory markers either predictive of atherosclerosis or associated with plaque instability in overweight/obese older adults with metabolic syndrome (MetS).

METHODS: A total of 150 older adults with overweight/obesity and MetS (60% women, mean age 66.4 ± 4.4 years) were analyzed in the PREDIMED-Plus study (ISRCTN89898870). The participants were randomized to follow a low-calorie Mediterranean diet or assigned to a control group with non-intensive advice on a healthy Mediterranean-style diet without calorie restriction (n=75 by group). ELISAs were performed in baseline and 1-year in thawed plasma with commercial kits for soluble vascular cell adhesion molecule-1 (sVCAM-1), soluble intercellular adhesion molecule-1 (sICAM-1), interleukins (IL): IL-6, IL-10 and IL-18, matrix metalloproteinase-9 (MMP-9), somatostatin receptor subtype 2 (SST-2), Endothelin-1, tumor necrosis factor-alpha (TNF-α) and Monocyte Chemoattractant Protein-1 (MCP-1).

RESULTS: One-year follow-up of a low-calorie Mediterranean diet resulted in a decrease in weight, BMI, waist circumference, blood pressure, glucose (-5.4 mg/dL), glycated hemoglobin (-1,525 mmol/mol), triglycerides (-13%) and cholesterol:HDLc ratio (-5%), and a 6% increase in HDLc (mg/dL). Additionally, a significant decrease in ICAM-1 (-176 mg/mL), IL-6 (-0.6 mg/mL), IL-18 (-8.7 mg/mL), MMP-9 (-1,317 pg/mL), endothelin-1 (-7.8 pg/mL), MCP-1 (8.6 mg/mL) and SST-2 (-145 pg/mL) was observed.

CONCLUSIONS: In this study conducted in participants enrolled in the PREDIMED-Plus trial who were followed for 12 months, we demonstrated that intensive lifestyle intervention was effective in producing a decrease in inflammatory markers related to atheroma plaque formation and plaque instability among overweight/obese adults with MetS.

COMUNICACIÓ PÒSTER 6.

Presenta: Alberto Domingo-Gómez - alberto.domingo@estudiants.urv.cat

DIFFERENTIAL EFFECT OF SEASONAL FRUITS EXTRACTS ON THE SERUM METABOLOME OF FISCHER 344 RATS DEPENDENT ON THE CONSUMPTION PHOTOPERIOD. Domingo-Gómez A, Bravo FI, Manocchio F, Muguerza B, Del Bas J.

GRUP DE RECERCA CCNIEC: NUTRIGENÒMICA

Universitat Rovira i Virgili (Tarragona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-en-nutrigenomica/

Filiació:

Alberto Domingo-Gómez[1,2], Francisca I. Bravo[1,2,3], Francesca Manocchio[1,2,3], Begoña Muguerza[1,2,3,4], Josep del Bas[1,2,3].
[1]Universitat Rovira i Virgili, Department of Biochemistry and Biotechnology, Nutrigenomics Research Group, 43007, Tarragona, Spain; [2]Nutrigenomics Research Group, Institut d'Investigació Sanitària Pere Virgili. C/ Marcel·lí Domingo s/n 43007 Tarragona, Spain; [3] Center of Environmental, Food and Toxicological Technology (TecnATox), University Rovira i Virgili, C/ Marcel·lí Domingo s/n, 43007 Tarragona, Spain; [4]CIBERobn Physiopathology of Obesity and Nutrition, Institute of Health Carlos III, Madrid, Spain

---

Phenolic compounds are known for their health-promoting effects and ability to influence biological rhythms. Previous work from our group demonstrated that ethanolic extracts from fruits (EEF) modulate metabolic parameters in Fischer 344 (F344) rats depending on photoperiod. This study assessed the effects of eight fruit EEFs on the serum metabolome of F344 rats under different light-dark cycles. EEF sources included four winter and four summer fruits. Male F344 rats fed with standard diet were exposed to two photoperiods: L6 (6 h light/18 h dark, mimicking winter) and L18 (18 h light/6 h dark, mimicking summer). After a 4-week adaptation, rats (n = 8/group) received daily supplementation for 2 weeks with 100 mg/kg of EEF derived from grape, pomegranate, orange, kaki (winter-fruit extracts), apricot, strawberry, plum, or cherry (summer-fruit fruits), or 1.5 mL of water (control). Serum samples were analyzed for 59 metabolites using Gas Chromatography–Quadrupole Time-of-Flight Mass Spectrometry (GC-qTOF MS). Data analysis began with assessing the photoperiod effect by comparing both control groups. Principal Component Analysis (PCA) revealed a clear distinction between L6 and L18 control groups, confirmed by Permutational Multivariate Analysis of Variance (PERMANOVA). Partial Least Squares-Discriminant Analysis (PLS-DA) identified key discriminant metabolites (VIP-score > 1), and Mann-Whitney analysis pinpointed those significantly different. Quantitative enrichment analysis using the KEGG database indicated that L6 exposure significantly altered the serum metabolome, shifting it towards a highly catabolic profile. Regarding EEF effects, all winter extracts resulted in a metabolome similar to L6-C, except for persimmon kaki, which was the only EEF without an EEF-photoperiod interaction. Among summer extracts, consumption significantly altered the metabolome for apricot and strawberry in both photoperiods, and for plum under L18. An EEF-photoperiod interaction was noted for plum. These findings highlight the photoperiod-sensitive metabolic effects of phenolic-rich fruit extracts and support their potential for personalized dietary strategies.

This work was carried out within the framework of the project PID2020-113739RB-I00, financed by: MCIN/AEI /10.13039/501100011033.

A. D-G acknowledges the support of the "Agència de Gestió d'Ajuts Universitaris i de Recerca" through the research collaboration grant (2024 COLAB 00371).

COMUNICACIÓ GUADONADA AMB EL PREMI A LA MILOR COMUNICACIÓ PÒSTER

COMUNICACIÓ PÒSTER 7.

Presenta: Marta Ros Baró - mrosba@uoc.edu

EFECTES DE LA SUPLEMENTACIÓ AMB FARINA D'INSECTE COMBINAT AMB EXERCICI FÍSIC EN FACTORS DE RISC CARDIOVASCULAR EN ADULTS MAJORS DE 60 ANYS. Ros-Baró M, Kaffi K, López-Ruiz S, Casas-Prieto M, Saez-Horts M, Casas-Agustench P, Díaz-Rizzolo D, Bach-Faig A, Chiva-Blanch G.

GRUP DE RECERCA CCNIEC: NUTRALiSS (Nutrició, Alimentació, Salut i Sostenibilitat)

Institut d'Investigació en Nutrició i Seguretat Alimentària, Universitat de Barcelona

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/nutraliss/

Filiació:

Ros-Baró Marta, Kabbout Kaffi; López-Ruiz Sheila; Casas-Prieto Mònica; Saez-Horts Marta; Casas-Agustench Patricia; Díaz-Rizzolo, Diana; Bach-Faig Anna; Chiva-Blanch Gemma.

Grup de Recerca CCNIEC "Nutrició, Alimentació, Salut i Sostenibilitat" (NUTRALiSS)

INTRODUCCIÓ I OBJECTIUS: El 20% dels catalans tenen >60 anys, grup amb major prevalença de sarcopènia i risc cardiovascular. A més, aquesta etapa ve acompanyada d'un major requeriment proteic. Els suplements proteics actuals tenen un alt impacte ambiental vs els d'insectes, que alhora tenen un perfil nutricional més cardiosaludable. L'objectiu d'aquest estudi pilot és avaluar l'efecte de la suplementació amb farina d'insecte (FI) combinat amb exercici físic en factors de risc cardiovascular en adults> 60 anys.

MATERIALS I MÈTODES: Estudi pilot aleatoritzat, doble cec, paral·lel i controlat (n=28 ≥60 anys). Intervencions: grup experimental (FI; 35g/dia farina de *Tenebrio molitor*) vs. control (farina de blat de moro), administrats com a galeta post-entrenament (segons el programa Vivifrail, 3 dies/setmana durant 1 mes). Abans/després del mes d'intervenció es van mesurar: pressió arterial, composició corporal (IMC, massa muscular i greix corporal), perfil lipídic (triglicèrids, colesterol total, LDL i HDL) i funció hepàtica (ALT/AST), així com els canvis en la dieta (recordatoris de 24h de 3 dies). Anàlisi estadística: ANOVA de mesures repetides amb el grup d'intervenció com a covariable (SPSS v29).

RESULTATS: Després de la intervenció, no es van trobar diferències significatives en la ingesta dietètica, IMC i triglicèrids entre grups. El grup FI va augmentar un 10% la massa muscular (p=0.024 vs. control), sense canvis en greix corporal. La pressió arterial diastòlica i el colesterol LDL van disminuir en el grup FI (p=0.003 i 0.049, respectivament). Els enzims hepàtics (ALT i AST) van disminuir en el grup FI (p= 0.049 i 0.044) i van augmentar en el grup control (p= 0.012 i 0.013), per a ALT i AST, respectivament.

CONCLUSIONS: La suplementació amb farina d'insecte post-exercici físic millora significativament la massa muscular, i la funció hepàtica en adults ≥60 anys, i millora els nivells de colesterol LDL i pressió arterial. La farina d'insectes es presenta com una font proteica sostenible, funcional i cardiosaludable per a les persones majors de 60 anys, tot i que es requereixen estudis amb mostra més gran i a més llarg termini per confirmar-ho.

COMUNICACIÓ PÒSTER 8.

Presenta: Ailende Eigbefoh-Addeh Imafidon - ailende.eigbefoh-addeh@urv.cat

INGESTA I ESTAT DE VITAMINES DEL GRUP B EN ADULTS D'UNA REGIÓ MEDITERRÀNIA KM0 NO EXPOSATS A L'ÚS DE SUPLEMENTS NI A LA FORTIFICACIÓ OBLIGATÒRIA. Eigbefoh-Addeh A, Salas-Huetos A, Ramos-Rodriguez C, Santos-Calderón L, Ceruelo S, Ríos L, Fernandez-Ballart J, M Murphy M.

GRUP DE RECERCA CCNIEC: ALIMENTACIÓ, NUTRICIÓ, DESENVOLUPAMENT I SALUT MENTAL (ANUT-DSM)

Facultat de Medicina de Reus, Universitat Rovira i Virgili (Reus)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-nutricio-alimentacio-creixement-i-salut-mental-nutcrsm/

Filiació:

Ailende Eigbefoh-Addeh [1,2], Albert Salas-Huetos[1,2,3,4], Carla Ramos-Rodriguez[1,2], Luis Santos-Calderón[1,2], Santiago Ceruelo[3,5], Lídia Ríos[6], Joan Fernandez-Ballart[1,3], Michelle M Murphy[1,2,3].

[1]Unitat de Medicina Preventiva i Bioestadística, Facultat de Medicina i Ciències de la Salut, Universitat Rovira i Virgili, IISPV, Grup de Recerca ANUT-DSM, 43201 Reus, Espanya; [2]Grup CCNIEC "Alimentació, Nutrició, Desenvolupament i Salut Mental".[3]CIBEROBN, ISCIII, 28029 Madrid, Espanya; [4]Departament de Nutrició, Harvard T.H. Chan School of Public Health, Harvard University, US-02115 Boston, MA, EUA; [5]Centre d'Atenció Primària, 43760 El Morell, Tarragona, Espanya; [6]Hospital Lleuger Antoni de Gimbernat de Cambrils, 43850 Cambrils, Tarragona, Espanya.

INTRODUCCIÓ: La riboflavina, piridoxina, folat i cobalamina tenen funcions claus i interconnectades en el metabolisme cel·lular i en diversos processos fisiològics.

OBJECTIU: Avaluar la ingesta i l'estat de riboflavina, piridoxina, folat i cobalamina, en absència de fortificació obligatòria i d'ús de suplements, en adults del sud de Catalunya, i examinar l'associació entre l'adherència a la dieta mediterrània (ADM) i l'estat d'aquestes vitamines.

MÈTODES: Es va seleccionar aleatòriament una mostra representativa d'adults (18-77 anys) de dues localitats a partir dels registres padronals, que no prenien suplements vitamínics Es van recollir mostres de sang en dejú i registres dietètics de tres dies. L'ADM es va avaluar amb l'índex Trichopoulou. L'estat del folat, el folat eritrocitari (RBCF) i la cobalamina es van determinar amb assajos microbiològics, i la riboflavina i la piridoxina mitjançant els coeficients d'activació de la glutatió reductasa (EGRAC) i de l'aspartat aminotransferasa (EASTAC), respectivament.

RESULTAT: Dels 740 participants (388 dones i 352 homes), el 61.8%, 6.5%, 10.9% i 5.8% no assolien el requisit mitjà estimat de folat, cobalamina, riboflavina i piridoxina, respectivament. EGRAC ≥1.4 i EASTAC ≥1.6, indicatius de deficiència en riboflavina i piridoxina, respectivament, es van observar en el 35.9% i 56.0% dels participants. El 18.6% presentava deficiència de folat (<7nmol/L), mentre que les deficiències de cobalamina (<148pmol/L) i RBCF (<340nmol/L) van ser poc freqüent (1.6% i 1.5%, respectivament). Només el 17.4% mostraven una bona ADM (puntuació ≥6). Els del quartil més alt d'ADM tenien una ingesta de folat (354.5 vs. 214.9 µg/dia; P <0.001), folat plasmàtic (14.5 vs. 10.0 nmol/L; P <0.001) i RBCF (895.7 vs. 692.8 nmol/L; P <0.001) superiors als del quartil més baix (puntuació ≤2).

CONCLUSIONS: Tot i que els participants amb bona ADM presentaven millor ingesta i estat de folat, es van observar deficiències fins i tot en aquest grup. Altres vitamines no variaven.

COMUNICACIÓ PÒSTER 9

Presenta: Ana Valle - ana.valle@uib.cat

LA SUPLEMENTACIÓ AMB MIOINOSITOL EN RATES LACTANTS AMB OBESITAT INDUÏDA PER LA DIETA ATENUA ALTERACIONS METABÒLIQUES MATERNES I AFAVOREIX LA SALUT PRIMERENCA DE LA DESCENDÈNCIA. Valle A[3] ,Reynés B, Petre Munteanu A, Palou A, Picó C, Palou M.

GRUP DE RECERCA CCNIEC: GRUP DE RECERCA: NUTRIGENÒMICA, BIOMARCADORS I AVALUCIÓ DE RISCOS

Universitat de les Illes Balears (UIB), Illes Balears, CIBERobn; Institut d'Investigació Sanitària Illes Balears (IdISBa)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-laboratori-de-biologia-molecular-nutricio-i-biotecnologia-nutrigenomica/

Filiació:

Ana Valle[1,2,3] , Bàrbara Reynés[1,2,3], Andrei Petre Munteanu[1], Andreu Palou[1,2,3,4], Catalina Picó[1,2,3,4] i Mariona Palou[1,2,3].

[1.]Grup de Recerca CCNIEC "Nutrigenòmica, Biomarcadors i Avaluació de riscos", Laboratori de Biologia Molecular, Nutrició i Biotecnologia, Universitat de les Illes Balears; [2]Institut d'Investigació Sanitària de les Illes Balears (IdISBa); [3]CIBER Fisiopatología de la Obesidad y la Nutrición (CIBEROBN), Madrid, España; [4]Institut d'Intel·ligència Artificial de les Illes Balears (IAIB).

INTRODUCCIÓ I OBJECTIU: L'obesitat materna en etapes perinatals pot afectar la programació metabòlica de la descendència. El mioinositol (MI), un compost bioactiu present de forma natural a la llet materna, s'ha proposat com a protector davant els efectes d'una programació metabòlica alterada. El present estudi avalua els efectes de la suplementació materna amb MI durant la lactància en rates amb obesitat induïda per la dieta sobre la salut materna i la de la descendència a curt termini.

MATERIAL I MÈTODES: Rates *Wistar* femelles van ser alimentades amb una dieta control (CON) o obesogènica (WD) un mes abans de l'aparellament i durant la gestació i la lactància. Durant la lactància, les mares van rebre una dosi oral diària de MI o el vehicle. Al deslletament, es va avaluar el contingut lipídic hepàtic i l'expressió gènica al fetge i el teixit adipós retroperitoneal (rWAT) de les mares. En la descendència, a dia 22 de vida, es van mesurar els nivells circulants de MI, insulina i el factor neurotròfic derivat del cervell (BDNF).

RESULTATS: La suplementació amb MI va reduir l'acumulació de lípids hepàtics en les mares WD i va disminuir l'expressió de marcadors proinflamatoris al fetge (*Tnfα*) i al rWAT (*Tnfα*, *Il6* i *Cd68*), tant en les mares CON com en les WD, contrarestant els efectes d'una dieta obesogènica. En la descendència, la major ingesta de MI a través de la llet materna s'associà amb un augment dels nivells circulants de BDNF i una reducció dels d'insulina, suggerint una millor regulació glucèmica.

CONCLUSIONS: La suplementació materna amb MI durant la lactància millora el metabolisme lipídic i redueix la inflamació en les mares, i afavoreix l'homeòstasi de la glucosa en les cries a curt termini, suggerint que podria ser una estratègia per contrarestar les conseqüències metabòliques de l'obesitat induïda per la dieta.

COMUNICACIÓ PÒSTER 10.

Presenta: Chiara Gai - chigai@uoc.edu

ULTRA-PROCESSED FOODS AND SOCIAL SUSTAINABILITY: A SCOPING REVIEW OF THE CONSUMPTION STAGE. Chiara Gai.

GRUP DE RECERCA CCNIEC: GRUP INTERDISCIPLINAR EN ALIMENTACIÓ, NUTRICIÓ, SOCIETAT I SALUT (FOODLAB)
Estudis de Ciències de la salut. Universitat Oberta de Catalunya (Barcelona)
WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-interdisciplinar-en-alimentacio-nutricio-societat-i-salut-foodlab/

Filiació:
Chiara Gai.
GRUP DE RECERCA CCNIEC INTERDISCIPLINAR EN ALIMENTACIÓ, NUTRICIÓ, SOCIETAT I SALUT (FOODLAB), Estudis de Ciències de la Salut. Universitat Oberta de Catalunya (Barcelona).

ABSTRACT

Ultra-processed foods (UPF) have been widely debated for their association with poor nutritional quality, adverse health outcomes, and negative impacts on environmental sustainability. However, their relationship with social sustainability remains largely underexplored. Social sustainability encompasses dimensions such as affordability, accessibility, equity, cultural appropriateness, social inclusion, and time availability for food preparation. Understanding these aspects is essential to avoid reductive approaches that stigmatize consumers and to inform the development of food policies that are not only health-promoting and environmentally sustainable, but also socially just. This research aims to map the available scientific evidence on the links between UPF consumption and social sustainability, focusing on the consumption stage of the food supply chain. A scoping review is being conducted following the PRISMA-ScR guidelines and the methodological framework proposed by Arksey and O'Malley, with adaptations by Levac et al. Studies published between 2015 and 2024 in English or Spanish are being identified through Scopus, Web of Science, PubMed, and selected grey literature sources. The search strategy combines terms related to UPF consumption with social sustainability, equity, food justice, inclusion, stigma, and cultural acceptability. Eligible studies include empirical research and conceptual papers addressing social dimensions of UPF consumption. Study selection and data extraction are being carried out by the principal investigator and subsequently reviewed by a second researcher to ensure consistency and minimize bias. Despite the growing interest in the health and environmental implications of UPF, preliminary evidence suggests that social sustainability at the consumption stage remains the least explored dimension within the food supply chain. This gap highlights the need to better understand how UPF consumption intersects with social equity, access, and cultural diversity.

Initial findings suggest that incorporating social sustainability perspectives into the UPF debate could enrich current approaches and support the development of more equitable, inclusive, and socially responsive food policies.

COMUNICACIÓ PÒSTER 11.

Presenta: Antoni Estelrich - antoni.estelrich@idisba.es

REVISIÓ NARRATIVA DELS ÍNDEXS DIETÈTICS BASATS EN LES RECOMANACIONS "EAT-LANCET". Estelrich A, Romaguera D, Curto A.
GRUP DE RECERCA CCNIEC: EPIDEMIOLOGIA NUTRICIONAL I FISIOPATOLOGIA CARDIOVASCULAR (NUTRECOR)
Institut d'Investigació Sanitària Illes Balears (IdISBa) i CIBERobn
WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/nutrecor_idisba/

Filiació:
Antoni Estelrich*[1], Dora Romaguera[1,2], Ariadna Curto[1].
[1]Grup de Recerca CCNIEC: "Epidemiologia Nutricional i Fisiopatologia Cardiovascular (NUTRECOR)", Institut d'Investigació Sanitària de les Illes Balears, Hospital Universitari Son Espases, Palma de Mallorca, Espanya; [2]Centro de Investigación Biomédica en Red Fisiopatología de la Obesidad y la Nutrición (CIBEROBN), Instituto de Salud Carlos III, Madrid, Espanya.

INTRODUCCIÓ I OBJECTIUS: La publicació de la "EAT-Lancet Commission" el 2019, ha motivat la creació de nombrosos índexs dietètics per mesurar l'adherència de diverses poblacions a la seva proposta dietètica. No obstant això, la manca d'harmonització metodològica entre aquests índexs dificulta la seva comparabilitat i aplicabilitat. L'objectiu d'aquest treball és fer una revisió narrativa dels índexs desenvolupats a partir de les recomanacions EAT-Lancet, identificar-ne les limitacions i proposar criteris per al desenvolupament d'un nou índex.

MÈTODES I MATERIALS: Es va dur a terme una cerca narrativa no sistemàtica per identificar els índexs dietètics basats en la EAT-Lancet i publicats fins al 24 d'abril de 2025. Es va sintetitzar la informació en una taula comparativa, incloent-hi l'estructura de puntuació, els grups d'aliments considerats i les limitacions identificades.

RESULTATS: S'han identificat 13 índexs originals i tres revisions sistemàtiques que avaluen 11 d'aquests índexs. L'anàlisi dels índexs mostra limitacions comunes importants: l'aplicació de la mateixa puntuació per cada categoria, no consideració dels rangs recomanats per la EAT-Lancet, l'agrupació d'aliments amb impactes ambientals molt dispars (com vedella i porc), la penalització de dietes vegetarianes i no penalització per aliments poc saludables com l'alcohol, el cacau i el cafè. Es proposa un nou índex que pondera cada grup d'aliments segons quatre dimensions ambientals, atorga la màxima puntuació dins els rangs recomanats, separa el formatge de la resta de làctics, permet la intercanviabilitat entre fonts de proteïna i de lípids i penalitza aliments poc saludables i les desviacions calòriques totals.

CONCLUSIONS: Aquesta revisió confirma l'heterogeneïtat metodològica entre 13 dels índexs dietètics existents basats en les recomanacions de la EAT-Lancet. Es proposa la creació d'un nou índex que superi les limitacions dels índexs anteriors i afavoreixi una major coherència en futurs estudis i una millor aplicabilitat en poblacions diverses.

COMUNICACIÓ PÒSTER 12.

Presenta: Camilo J Dongarrá Travecedo - camilojose.dongarra@estudiants.urv.cat

THE MEDITERRANEAN DIET PYRAMID FOR CHILDREN AND YOUTH AS AN EDUCATIONAL TOOL: AN INTERVENTION STUDY IN SCHOOLCHILDREN AGED 3 TO 18 IN CATALONIA. Dongarrá Travecedo C, Raidó B, Ruiz-León1 AM, Estruch R, Casas R.

GRUP DE RECERCA CCNIEC: FUNDACIÓ DIETA MEDITERRÀNIA– FDMED"

Fundació Dieta Mediterrània (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/grup-de-recerca-fundacio-dieta-mediterrania/

Filiació:

Dongarrá Travecedo C[1], Raidó[1,5,6], Ruiz-León AM[1,2,3,4,5,] Estruch R [2,3,4,5,] Casas R [2,3,4,5.]

[1]Fundación Dieta Mediterránea, Barcelona, Spain; [2]Department of Internal Medicine, Hospital Clínic, Institut d'Investigació Biomèdica August Pi i Sunyer, Universitat de Barcelona, Barcelona, Spain ; [3]CIBER de Fisiopatologia de la Obesidad y la Nutrición (CIBEROBN 0603), Instituto de Salud Carlos III, Madrid, Spain; [4]Institut de Recerca en Nutrició i Seguretat Alimentaria (INSA-UB). University of Barcelona, Barcelona, Spain; [5]Grup de Recerca Fundació Dieta Mediterrània – FDMED (CCNIEC); [6]Departament d'Infermeria Fonamental i Clínica, Facultat d'Infermeria, Universitat de Barcelona.

INTRODUCTION AND OBJECTIVE: The Mediterranean diet is a balanced lifestyle that includes recipes, cooking methods, celebrations, and customs. These traditions are gradually being lost, negatively affecting health. Education in schools is key to preventing non-communicable chronic diseases. The Child and Youth Mediterranean Diet Pyramid is a visual educational tool that highlights the fundamental pillars of this lifestyle. The aim of this study is to measure the interpretation capacity of this pyramid among schoolchildren after an educational intervention.

MATERIALS AND METHODS: A quasi-experimental pre-post intervention study was conducted on a sample of 1505 children and adolescents aged 3 to 18 years in educational centers in Catalonia. Children were divided into four age groups: Group 1 (3–6 years), Group 2 (7–12 years), Group 3 (12-16 years) and Group 4 (16-18 years). The study consisted of three phases: first, a pre-test adapted to each age group was used to measure their ability to interpret the pyramid; second, an educational intervention using age-appropriate visual materials (posters and presentations) explaining the pyramid was carried out; finally, a post-test was applied to assess interpretation and understanding of the pyramid after the intervention.

RESULTS: All groups obtain a higher percentage of correct answers on the post-test than in the pre-test. Group 2 and 3 showed a very significance difference ($p<0{,}001$) between the Positive Ranks and the Negative ranks on the Wilcoxon signed-rank test. Group 4 also showed a significance difference ($p=0{,}001$) and Group 1 showed no significance difference ($p>0{,}05$).

CONCLUSIONS:

The educational intervention proved to be effective in improving the understanding and interpretation of the pyramid. The Child and Youth Mediterranean Diet Pyramid is an effective and understandable educational tool for children and adolescents between 3 and 18 years old.

COMUNICACIÓ PÒSTER 13.

Presenta: Malen Massot-Cladera - malen.massot@ub.edu

MODULACIÓ DE LA MICROBIOTA INTESTINAL MITJANÇANT EXERCICI FÍSIC INTENS I UNA DIETA RICA EN FLAVONOIDES EN ROSEGADORS. Massot-Cladera M, Ruiz-Iglesias P, Veloso C, Franch À, Rodríguez-Lagunas MJ, Pérez-Cano FJ, Castell M.

GRUP DE RECERCA CCNIEC: AUTOIMMUNITAT, IMMUNONUTRICIÓ I TOLERÀNCIA

Facultat de Farmàcia i Ciències de l'Alimentació; Dept. Bioquímica i Fisiologia; Secció de Fisiologia (UB) – (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/autoinmunitat/

Filiació:

Massot-Cladera, M.[1]*, Ruiz-Iglesias P[1], Veloso C[1], Franch À[1]*, Rodríguez-Lagunas MJ[1]*, Pérez-Cano, FJ[1]*, Castell M[,2]*.

[1]Secció de Fisiologia del Departament de Bioquímica i Fisiologia-Facultat de Farmàcia i Ciències de l'Alimentació i Institut de Recerca en Nutrició i Seguretat Alimentària (INSA), Universitat de Barcelona, Barcelona, Espanya; [2]Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y la Nutrición (CIBEROBN), Instituto de Salud Carlos III; Madrid, Espanya; *Grup de Recerca CCNIEC "Autoimmunitat, Immunonutrició i Tolerància".

INTRODUCCIÓ I OBJECTIUS: La composició de la microbiota intestinal depèn de diversos factors, entre els quals destaquen la dieta i situacions estressants com pot ser un exercici físic intens. Aquest treball pretén establir els canvis en la composició de la microbiota intestinal induïts per l'exercici físic intens i per una dieta rica en cacau (amb i sense hesperidina) en rates Lewis.

MATERIAL I MÈTODES: Rates Lewis femelles adultes van seguir un protocol d'entrenament en una cinta corredora durant 6 setmanes amb temps d'exercici creixents i amb proves d'extenuació dos cops per setmana. Els animals van rebre una dieta estàndard (REF), una dieta isoenergètica amb un 10% de cacau desgreixat (C10, amb flavanols, fibra i metilxantines), o bé una dieta C10 enriquida amb un 0,5% d'hesperidina (CH, flavanona). Per a cada dieta, es va disposar d'un grup d'animals sedentaris (SED), un grup que va seguir tot el protocol d'entrenament (T) i un grup entrenat que, just abans de l'obtenció de mostres es va sotmetre a una prova d'extenuació (TE). Es van obtenir mostres de contingut cecal per caracteritzar la microbiota mitjançant tècniques de seqüenciació del RNA ribosòmic 16S bacterià.

RESULTATS: L'exercici físic aplicat augmenta la presència del fílum Bacteroidota, en incrementar la proporció de les famílies Rikanellaceae, Prevotellaceae, Bacteroidaceae, mentre que redueix el percentatge dels fílums Firmicutes i Desulfobacterota, en disminuir les famílies Clostridiaceae i Desulfovibrionaceae, respectivament. Les dietes C10 i CH potencien l'augment de Bacteroidota i la reducció de Desulfobacterota induïts per l'entrenament. A més, la dieta C10, però, evita la reducció de Firmicutes causada per l'extenuació.

CONCLUSIONS: L'exercici físic intens i extenuant modifica la composició de la microbiota intestinal en rates Lewis. Aquests canvis poden ser potenciats o revertits per una dieta rica en flavonoides, fibra i metilxantines, i poden repercutir en la seva salut intestinal.

COMUNICACIÓ GUADONADA AMB EL PREMI A LA MILOR COMUNICACIÓ PÒSTER

COMUNICACIÓ PÒSTER 14.

Presenta: Karla Rio-Aige - rioaigekarla@ub.edu

MATERNAL DIET SHAPES INFANT MICROBIOTA AND DEFENSIVE CAPACITY AGAINST INFECTIONS IN EARLY LIFE VIA DIFFERENTIAL BREAST MILK COMPOSITION. Rio-Aige K, Selma-Royo M, Cabrera-Rubio R, González S, Martínez-Costa C, Castell M, Massot-Cladera M, Rodríguez-Lagunas MJ, Collado MC, Pérez-Cano FJ.

GRUP DE RECERCA CCNIEC: AUTOIMMUNITAT, IMMUNONUTRICIÓ I TOLERÀNCIA

Facultat de Farmàcia i Ciències de l'Alimentació; Dept. Bioquímica i Fisiologia; Secció de Fisiologia (UB) – (Barcelona)

WEB CCNIEC: https://www.ccniec.cat/fitxa-grup/autoinmunitat/

Filiació:

Karla Rio-Aige[1,2]*, Marta Selma-Royo[3], Raúl Cabrera-Rubio[3], Sonia González[4,5], Cecilia Martínez-Costa[6], Margarida Castell[1,2,7]*, Malen Massot-Cladera[1,2]*, María J Rodríguez-Lagunas[1,2]*, María Carmen Collado[3], Francisco J Pérez-Cano[1,2]*.

[1]Physiology Section, Department of Biochemistry and Physiology, Faculty of Pharmacy and Food Science, University of Barcelona (UB); 08028 Barcelona, Spain; [2]Nutrition and Food Safety Research Institute (INSA-UB); 08921 Santa Coloma de Gramenet, Spain; [3]Institute of Agrochemistry and Food Technology (IATA-CSIC), National Research Council; 46980 Valencia, Spain; [4]Department of Functional Biology, Faculty of Medicine, University of Oviedo; 33071 Oviedo, Spain; [5]Diet, Microbiota and Health Group, Instituto de Investigación Sanitaria del Principado de Asturias (DIMISA, ISPA); 33011 Oviedo, Spain; [6]Department of Pediatrics, University of Valencia, INCLIVA Biomedical Research Institute, Avenida Blasco Ibáñez 15-17; 46010 Valencia, Spain; [7]Centro de Investigación Biomédica en red de Fisiopatología de la Obesidad y la nutrición (CIBEROBN), Instituto de Salud Carlos III; Madrid, Spain. *Grup de Recerca CCNIEC "Autoimmunitat, Immunonutrició i Tolerància".

ABSTRACT:

Newborns have limited immune responses and rely on maternal immune transfer mechanisms for defense and immune system development. Research on maternal diet and its impact on the maturation of the infant immune system is particularly relevant, as it is believed to help prevent and mitigate infections during infancy.

This study aimed to assess the impact of maternal diet on offspring health, focusing on the relationship between maternal nutrition, immune components of breast milk, immune system development, and neonatal microbial colonization. Two complementary approaches were used: an observational clinical study based on the MAMI birth cohort and a preclinical analysis using a neonatal rat model of rotavirus-induced gastroenteritis.

The results from both approaches demonstrated that a maternal diet rich in plant-based proteins, fiber, and polyunsaturated fatty acids was associated with a reduced incidence and severity of infections in offspring. Additionally, it promoted gastrointestinal and immune system maturation in the offspring in the preclinical model, fostering a Th1 response and enhancing defense against the virus. Furthermore, a beneficial impact was observed in both mothers and offspring at the end of lactation, and even one week after weaning.

In contrast, a diet low in fiber and rich in animal proteins, cholesterol, and monounsaturated fatty acids, along with low levels of IgA in human breast milk, predisposed infants to early infections in the human cohort. Microbial diversity at 1 month in these infants may also serve as a key indicator of future infections.

In conclusion, this study provides a better understanding of the relationship between maternal diet, bioactive components of breast milk, infant microbiota, and immunity. The findings emphasize the importance of adequate nutrition during pregnancy and lactation in supporting infant health and preventing infections during the early years of life.

AMB LA PARTICIPACIÓ I SUPORT CIENTÍFIC

LLIBRE D'ABSTRACTS

SESSIÓ CIENTFICA DEL CCNIEC 2025
***HOT TOPICS* I AVENÇOS EN NUTRICIÓ**

Barcelona, 23 de maig de 2025

Institut d'Estudis Catalans. C. del Carme, 47 08001 Barcelona – Sala Pere i Joan Coromines

Organització: CCNIEC

Edita:
CCNIEC - Centre Català de la Nutrició de l'Institut d' Estudis Catalans, 2025.