EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

Curriculum Vitae

Personal information

Mojca Lunder

Work experience

1. Employer: Faculty of Pharmacy University of Ljubljana
   - Start date: 2003
   - End date:
   - Position: Vice_Dean, Professor
   - Activities: Combination of research and teaching activities at the Department of Pharmaceutical Biology, UL FFA.
   - Country: Slovenia

Education and training

1. Subject: University of Ljubljana, Faculty of Pharmacy
   - Start date: 2002
   - End date: 2008
   - Qualification: PhD
   - Organisation: Interdisciplinary doctoral study programme Biomedicine Field: Pharmacy
   - Country: Slovenia

Additional information

Publications

Full bibliography can be found at:
https://bib.cobiss.net/bibliographies/si/webBiblio/bib201_20220214_142727_25096.html

Projects

CURRENT RESEARCH INTEREST 1. Epitope based immunotherapy of allergies 2. Delivery systems for active peptides 3. Inhibitors of enzymes involved in nutrient absorption and inhibitors of hormones involved food intake regulation 1. Epitope based immunotherapy of allergies Conventional immunotherapy is associated with frequent side effects, including systemic reactions. For development of safer immunotherapy epitope_like peptides show great potential. Our interest is focused on identification of such short peptides that mimic allergen epitopes (structural B cell epitopes) by means of recombinant DNA technology and affinity selections from biological combinatorial libraries and on their role in immunotherapy (Luzar J et al. Allergy 2016). We have successfully identified peptide mimetics of major cat allergen Fel d 1 epitopes, and in the next step we expressed mimotopes on an immunogenic carrier (Luzar J et al. Molecular Immunology 2016). The peptide mimotopes showed no basophil activation in allergic patients (no allergenic activity) and elicited desired (reduced in allergies) type 1 T cell response. We determined epitopes of inhalational allergen, major ragweed allergen Amb a 1 (Zahirović A et al. Acta Chim Slov 2019). Recently our attention turned to two most life_threatening IgE_mediated allergies; allergy to peanuts and allergy to hymenoptera venom. We have identified IgE epitopes of the major bee venom allergen Api m 1 and evaluated the immunotherapeutic potential of peptides mimicking these epitopes (mimotopes). Epitopes have been found to be located on the accessible loops protruding from the allergen surface and do not include glycosylated sites. Peptide mimotopes were prepared as fusions with the carrier and their binding to IgE from the serum of allergic patients was determined. Cellular testing of peptides in allergic patients has shown that mimotopes are not allergenic. In combination with a suitable carrier, they are also capable of stimulating an appropriate immune response (Zahirović et al. J Allergy Clin Immun 2019). Our work represents an important step towards better understanding of sting anaphylaxis pathogenesis and towards development of safer and targeted immunotherapy for bee venom allergy. Moreover, we are developing and testing delivery systems for targeting gastrointestinal tract mucosal surfaces by utilizing biological carriers such as food grade lactic acid bacteria (Lunder M, patent US 8754198 B2 2014) and bacteriophages (Luzar J et al. Mol Immunol 2016; Zahirović et al. J Allergy Clin Immun 2019; Zahirović A et al. Front Microbiol 2018). 3. Delivery systems for active peptides Food grade bacteria such as lactic acid bacteria have become increasingly studied over the last two decades as potential delivery systems for various biological molecules to the mucosal surfaces and gastrointestinal tract. We have prepared and patented a platform for surface expression of peptides for their delivery to mucosal membranes (Lunder M, patent US 8754198 B2 2014). We have tested Lactococcus lactis displaying TNFα_binding polypeptide for the treatment of mice with dextran sulphate sodium (DSS)_induced colitis (Berlec A et al. Int Immunopharmacol. 2017). In chosen mouse model an apparently detrimental effect of TNFα neutralization was observed. Nevertheless, we have demonstrated that oral administration of bacteria with surface displayed TNFα_binding affibody can interfere significantly with TNFα signaling. Our next goal is to use this delivery system for delivery of allergen epitope mimetics to mucosal surfaces. Another biological delivery system we are investigating are filamentous bacteriophages. They have simple chemical composition, they are stable and are easy to produce and purify in large amounts (Zahirović A et al. Front Microbiol 2018). Peptides are protected by the phage carrier, which provides extended degradation time and indicates that phage particles are appropriate vectors for oral and mucosal application. We constructed and characterized filamentous bacteriophage as immunogenic carrier displaying multiple copies of a major cat allergen mimotope (Luzar J et al. Molecular Immunology 2016). 3. Inhibitors of enzymes involved in nutrient absorption and inhibitors of hormones involved food intake regulation In this area of our research interests we are focusing on identification and characterization of peptide and other (small molecular) compounds that inhibit carbohydrate gut metabolism and absorption and consequently influence postprandial hyperglycemia as well as compounds that are inhibitors of lipid gut absorption (Lunder M. et al. J Lipid Res 2005; Gaser D. et al. Acta Chim Slov 2009; Roškar I. et al. J Diabetes Investig 2015; Roškar I et al. Plant Foods Hum Nutr 2016; Lunder M et al. Plant Foods Hum Nutr 2019). Our research is also focused on identification and characterization of peptides that influence ghrelins regulation of food intake (Vodnik M et al. Horm Metab Res 2013, Lunder M et al. J Neuroendocrinol, 2018).

Memberships

She lectured and researched at the Faculty of pharmacy of Comenius University in Bratislava and at the University of veterinary and pharmaceutical sciences in Brno. She participates in numerous expert commissions and committees (member of the FFA Management board until 2018, member of the Ethics committee for animal experiments,

member of the Commission for pharmacopoeia and for the preparation of the National supplement to the European pharmacopoeia, member of the evaluation group in the UNESCO_LOREAL Committee "For Women in Science" and a member of the group for the preparation of the Slovenian Pharmaceutical Terminology Dictionary). With numerous popular and professional publications, she strives to bring science closer to the general public. She is also a two_time recipient of the ZRC SAZU Award “Prometheus of Science for Excellence in Communication”.

Other Relevant Information