



PREDOCTORAL POSITION available in MoBioFood Research Group, Universitat Rovira i Virgili, Tarragona, Spain

Project Title: “Bioactivity of flavanols in the gastrointestinal wall: enteroendocrine and immunoprotective effects to prevent Metabolic Syndrome”

Project description:

This project is focused on the study of therapeutic targets for insulin resistance and obesity by analyzing the effects of natural bioactive compounds at intestinal level. Polyphenol rich extracts have been previously shown to exert beneficial metabolic effects. Our hypothesis is that procyanidins, phenolic compounds found in fruits and vegetables, through its interaction with enteroendocrine and immunoprotective functions of the gastrointestinal tract wall may, prior to absorption, condition the function of the body so that they could be useful in preventing pathologies associated with the metabolic syndrome, in particular, insulin resistance, obesity and inflammation.

We have previously shown the action of a grape seed extract on the action of hormone GLP-1, and it has been defined an acute dosage of extract with satiating action. Such action on enteroendocrine system requires a more detailed physiological study to assess whether it can be applied as a chronic therapy in pathological conditions. Also a more detailed study at mechanistic level is needed, because it also may be due to the action of flavanols on other enteroendocrine signals. Furthermore, in this project we intend to complement the study with analysis of the anti-inflammatory properties of flavanols in the gastrointestinal tract. It is an unexplored field and very promising given the already demonstrated anti-inflammatory capacity of flavonoids in other tissues, which may contribute to improve the overall functionality of the organism.

We propose to resolve this hypothesis firstly in experimental animals. As a first objective we will select the chronic dose of grape seed extract which is more bioactive; and its effects in different experimental animal models. The second objective will identify the time of administration that is most suitable to avoid the complications caused by a hyperphagic diet, associated with the metabolic syndrome. The study will be completed by two approaches with in vitro and ex vivo models. The third objective is intended to identify bioactive molecules in histotypic models of entero-endocrine and entero-inflammatory system, working with different extracts products of digestion in each of its stages, as well as pure molecules.

This analysis of bioactivity and molecular mechanisms will be completed by the fourth objective where the results obtained with the response of cells and human ileal mucosa of the same molecules digested and checked against colon.

Candidate requirements:

- Highly motivated student with special interest in the research areas of Metabolism Regulation and Nutrition.
- Degree in Biology, Biochemistry or related life sciences with high grade point average.
- Master in Biosciences at the point of enrollment.

Grant available:

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Grant characteristics:

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If interested, please email us your detailed CV, a brief statement of research experience and interests.