

NUTRIFORM

One-year international research and training project in Nutrition and Health

ABSTRACT

To deepen my knowledge of nutrition and public health, I started a new collaboration with the Department of Clinical Nutrition at the University of Eastern Finland (UEF, Kuopio Campus, Finland). Through this collaboration with Prof. K. Poutanen and H. Mykkänen, I did a one-year training and research stay in 2011 within the Food and Health Research Center of Kuopio. During this stay, I was able to follow the Master of Public Health Nutrition (MPHN) training programme. I also completed the construction of a student and teacher in Nutrition and Food Science exchange between the two institutions (UEF and Supagro) as part of a new Erasmus agreement.

Concerning research, I was able to conduct a clinical study of grain fractions prepared and characterized in the JRU IATE (SupAgro, Montpellier France) as part of a thesis entitled "The structure of fiber rich cereal matrices food and antioxidants affect their effects their health?" which I supervised. This work allowed us to assess the relationship between the structure of wheat bran and aleurone layer at different scales and their health effects. The antioxidant properties and the ability of the fractions to be fermented and to produce metabolites with anti-inflammatory properties in the colon were in vitro studied in SupAgro, INRA Avignon and VTT (Helsinki, Finland). An in vivo study on mice conducted in UEF allowed us to evaluate the potential of the aleurone physically and molecularly disintegrated to neutralize metabolic disorders such as obesity, oxidative stress and inflammation. Overall, this study shows that the health effects of aleurone are clearly related to its structural integrity; and that they can be increased by including change in its structure mainly at the molecular level by increasing the bioavailability and bioavailability of nutritionally valuable compounds, such as arabinoxylans and ferulic acid. In addition to collaboration between IATE (SupAgro) and the UEF and VTT in Finland, this study was the opportunity to work with 4 other JRU in France (Dynamic Muscle & Metabolism JRU INRA Montpellier, JRU SQPOV Avignon, RU BIA Nantes; JRU LIBio Nancy).

Year : 2010

Project number : 1000-001

Type of funding : SP

Project type : PC

Research units in the network : SQPOV

Start date : 2010-11-01

End date : 2013-02-27

Flagship project : no

Project leader : Valerie Micard

Project leader's institution : InstitutAgro

Project leader's RU : IATE

Budget allocated : 19993 €

Total budget allocated (including co-financing) : 19993 €

Funding : RTRA

RESULTS

The metabolomic signature performed on mice organs and plasma is underway in UEF Finland. It will be used to study the effect of different fractions of aleurone on the metabolism of mice. The whole research conducted in the present project has and will lead to five publications, two book chapters and one thesis.