PhD Project Advertisement

Project title: Improving the nutritional, health and sustainability profile of existing or novel plant/fungi-based foods - A STAR Hub-DTP partnership application

Project No: FBS2024-103-Ahmadi-sr

Lead supervisor: Kourosh Ahmadi, Nutritional Sciences, University of Surrey

Email: k.ahmadi@surrey.ac.uk

Co-supervisors:

Claire Williams, University of Reading

Barry O'Neill, Unilever

Project description:

According to the World Health Organization (WHO), around 1 billion people worldwide suffer from a mental health disorder, accounting for 16% of the world's population [1]. Depression alone is reported to affect more than 280 million people, and suicide, often a result of untreated mental health conditions, results in approximately 800,000 deaths annually [1]. Additionally, mental health disorders have been associated with increased comorbidity, particularly with chronic conditions such as cardiovascular disease, diabetes, and obesity [2]. Notably, these associated conditions are also heavily influenced by dietary factors, pointing to diet as a potential common denominator. Thus, individuals suffering from serious mental health disorders often face an early mortality, sometimes up to twenty years sooner than expected, largely due to physical health issues that could have been prevented [2]. The high prevalence, associated mortality, and comorbidity of mental health disorders place a substantial burden on health systems and society, thus necessitating effective preventative and therapeutic strategies.

We propose that moving towards more plant/fungi-based flexitarian diets is a healthier and more sustainable solution [3] to the strain on global supply chains caused by the increased cost of food coupled with an ageing population and a high prevalence of obesity, poor mental and cognitive health across all ages.

To this end, the aim of our current proposal is to provide robust evidence and analysis that supports how improvements of the nutritional and sustainability profiles of existing plant/fungi-based (PB) foods on the market can promote public and planetary health through reducing risk factors associated with deterioration in mental and cognitive health across the life-span. Ensuring nutritional adequacy, particularly with respect to macro/micronutrient profiles, and how best to incorporate more PB substitutes into our diet whilst maintaining sufficient intakes of key nutrients remains a significant challenge. For example, PB milks differ considerably from normal milk in terms of nutritional content and thus their suitability for specific population groups needs research. Another key challenge is that certain nutrients that have important functional roles are derived from food groups for which sustainability scores are low. There is also need to assess barriers and motivators to adopting PB diets and consider their relative contributions to successful behavior change across different groups.

The prospective student will work alongside the new BBSRC funded STAR Hub, a Diet and Health Open Innovation Research Club (OIRC) innovation hub to promote and facilitate collaborations between industry and academia. We propose that the student will work alongside the STAR Hub (26 industry partners) to undertake:

1) Scoping studies of existing plant/fungi-based foods for their nutritional, health and sustainability profiles;

2) Laboratory analysis and product evaluation in terms of nutrition, metabolic/cognitive health and sustainability profiles of highlighted products;

3) Modelling and cost evaluation analysis;

4) Assess barriers & motivators to adoption of PB diets and assess factors influencing knowledge, attitudes and behaviors

to purchasing;

5) Designing intervention studies and run pilot(s) to assess the relationship between cardiometabolic risk factors and cognitive/mental health outcomes following introduction of more PB alternatives.

The overall aim of the proposed project is to provide the food industry with robust evidence, including reformulation based on nutritional needs, health and sustainability profiles, as well as potential barriers & motivators to adoption of PB diets that are appropriate for public and planetary health.

Training opportunities:

The PhD will provide an interdisciplinary training program through targeted access to in-house MSc modules as well as bespoke external courses covering Epidemiology, Nutrition & Public Health communication, Food Policy & Consumer Behavior, as well as Health Economics.

There are vast opportunities for training (generic and bespoke) being offered through close links with the STAR Hub activities and the University of Surrey's new Institute of Sustainability. These include working alongside leaders of diet & Health research from both academic and industrial backgrounds as well as exposure to the latest translational and topical issues that industry is facing. One example being how "wrong" nudges and messaging around ultra-processed foods are currently frustrating one of our biggest "flour partner" industries to operate and get healthier bread options available to the public.

Student profile:

This project would be suitable for students with a degree in biology/biochemistry, nutrition, public health epidemiology, psychology or a closely related subject. The student should be passionate about the public, societal and planetary aspects of our food system and be interested in the cross-cut between academic and industry initiatives.

Stipend (Salary):

FoodBioSystems DTP students receive an annual tax free stipend (salary) that is paid in instalments throughout the year. For 2023/24 this is £18,622 and it will increase slightly each year at rate set by UKRI.

Equality Diversity and Inclusion:

The FoodBioSystems DTP is committed to equality, diversity and inclusion (EDI), to building a doctoral researcher(DR) and staff body that reflects the diversity of society, and to encourage applications from under-represented and disadvantaged groups. Our actions to promote diversity and inclusion are detailed on the FoodBioSystems DTP website.

In accordance with UKRI guidelines, our studentships are offered on a part time basis in addition to full time registration. The minimum registration is 50% FT and the studentship end date will be extended to reflect the part-time registration.

References:

1. World Health Organization (2017) Depression and other common mental disorders: Global health estimates. World Health Organization, Geneva.
2. Scott KM, Lim C, Al-Hamzawi A, et al. (2016) Association of Mental Disorders With Subsequent Chronic Physical Conditions: World Mental Health Surveys From 17 Countries. JAMA Psychiatry 73 (2):150-158.
3. Joshua Gibbs, Francesco P Cappuccio. Plant-Based Dietary Patterns for Human and Planetary Health. Nutrients. 2022 Apr 13;14(8):1614.

For up to date information on funding eligibility, studentship rates and part time registration, please visit the FoodBioSystems website.