

## PhD Project Advertisement

**Project title:** Food processing: For better or for worse? The impact of fruit drying on bioactivity, bioaccessibility and bioavailability of polyphenols

**Project number:** FBS2024-036-MillsCE-rs

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### Co-supervisors:

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### Project description:

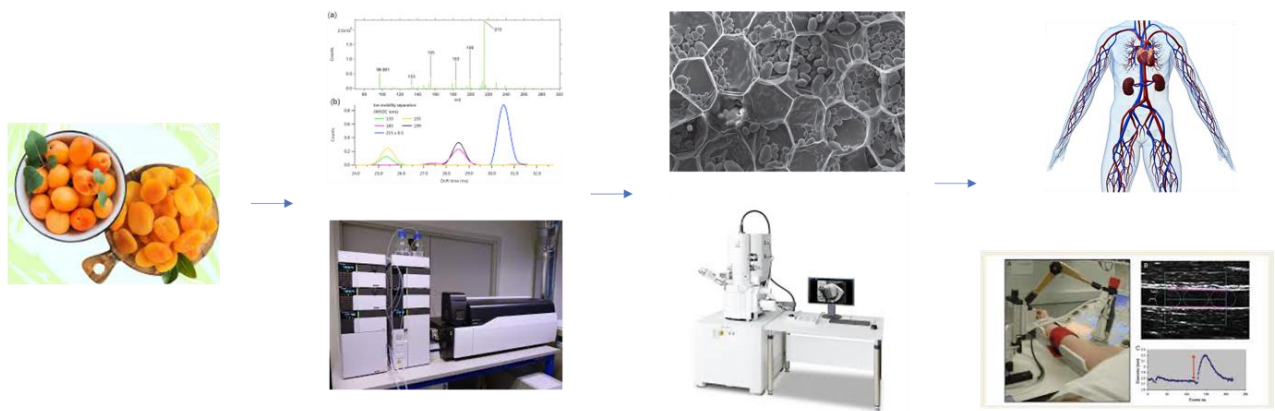
Cardiovascular disease (CVD) is the biggest cause of death worldwide. Polyphenols are compounds that are found naturally in many fruits (e.g blueberries and grapes); it is widely accepted that they reduce the risk of CVD by improving the function of blood vessels. However, it is not clear if the form in which the fruit is consumed impacts the extent of their ability to exhibit the beneficial effects.

Dried fruit is typically hailed as being nutritionally equal to fresh fruit, however this has never been assessed in relation to polyphenols. Further, during drying both chemical and physical changes are likely to occur which could impact the bioactivity of the native polyphenols and also how easy it is for the body to use them (bioavailability and bioaccessibility).

The aim of this project is to investigate the impact of fruit drying on the bioactivity, bioavailability and bioaccessibility of polyphenols and determine how this impacts cardiovascular health benefits.

In this project the student will:

- Use analytical techniques to assess fruit polyphenol composition and distribution
- Use microscopy to determine the potential bioaccessibility of polyphenols in fresh and dried fruit
- Perform a randomised controlled trial to investigate the differences in polyphenol liberation, absorption, metabolism and excretion from dried and fresh fruit
- Perform a randomised controlled trial to understand differences in cardiovascular health impact of fresh versus dried fruit



**Dried versus fresh fruit**

**Polyphenol composition and distribution**

**Plant cell integrity and bioaccessibility of polyphenols**

**Impact on cardiovascular health**

### Training opportunities:

The student will gain a vast array of research experience including both basis science and clinical skills. Namely these will be LCMS and microscopy methods (cryo scanning electron microscopy and confocal Raman microscopy). They will be trained to perform randomised controlled trials and will be given training in clinical assessment methods, notably ultrasound and applanation tonometry. They will also gain experience in dietary assessment and anthropometric methods. The student will also receive training in clinical trial statistics to process the data from the project.

### Student profile:

Students with a passion for food and nutritional science and an inquisitive nature would be suited to this project. We welcome applicants with backgrounds in nutrition, health and food sciences or broadly related subjects (e.g. life sciences, biochemistry or biomedical sciences). Previous laboratory experience is essential and practical experience in clinical science is desirable.

### 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.

**For up to date information on funding eligibility, studentship rates and part time registration, please visit the [FoodBioSystems website](#).**