

EPSRC supported PhD project: Innovative antibacterial products

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Healing Honey International

Tax free bursary of £16,800 p.a. plus fees

Healing Honey International is focused on bringing an innovative antibacterial product to the global market by development of a number of different formulations that can be used across a range of surgical domains.

Honey is a complex formulation of monosaccharides (fructose and glucose), vitamins, and other compounds. Its healing properties have been exploited for thousands of years and today there exist several medical grade honeys (e.g. Manuka). All existing commercial honeys are strongly dependent on a single source of a specific species of flora, meaning that supply can be limited. Surgihoney, in comparison is produced synthetically, resulting in a vast reduction in variability. It has been shown to have antimicrobial activity *in-vitro* and clinical effectiveness in the treatment of acute and chronic wounds as well as the prevention of surgical wound infections. Generally, the effects of honey on wound healing have been shown to be wide ranging; from causing greater wound contraction to stimulating tissue growth, synthesis of collagen and the development of new blood vessels. Thus, the potential clinical areas are vast. There exists significant scope to enhance the efficacy of this product by formulating new dosage forms that allow for the controlled localised delivery of the active compound. This project will explore different formulations of the honey (patches, controlled release sachets, creams and sprays), that may be applied clinically.

Broadly, this project will focus on:

(1) The formulation of Surgihoney into different physical forms.

A variety of techniques will be investigated, including electrospinning and encapsulation, to combine Surgihoney with a number of different biomaterials resulting in the formulation of different solid forms.

(2) Physicochemical characterisation of the different Surgihoney formulations.

A range of techniques will be employed to examine composition, morphology, and mechanical properties.

(3) *In-vitro* characterisation of the different Surgihoney formulations.

Promising technology platforms will be further tested *in-vitro* to assess efficacy against relevant clinically used equivalents. This will require the use of a number of different assays to determine various cellular responses.

To be eligible for EPSRC funding candidates must have at least a 2(1) in an Engineering or Scientific discipline or a 2(2) plus MSc. Please email your c.v. to chem-engd@contacts.bham.ac.uk. For more details on the Engineering Doctorate scheme please visit

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