

School of Pharmacy PhD Project 2017 / 2018

Sustained Release of Eutectic systems composed of Local Anaesthetics and non-steroidal anti-inflammatory agent from biodegradable Hot Melt Extrudates to Enhance Post-Surgical Recovery

Professor David Jones and Professor Gavin Andrews

Major abdominal surgery is a metabolically and psychologically significant event associated with prolonged recovery and convalescence. Patients experience debilitating post-operative fatigue for up to three months even after uncomplicated abdominal surgery. Prolonged recovery is associated with significant physiological, psychological and social disturbances. A significant financial burden is also placed on patients as a result of delayed return to work and activities of daily living. This significantly affects the patient's quality of life in terms of mental well-being, social functioning, and role limitations.

In conjunction with the University of Auckland, we have previously shown that intraperitoneal administration of local anaesthetics leads to improved postoperative recovery after major abdominal surgery (translated into a 50% reduction in opioid use). Ongoing research has led to the development of a non-degradable implant, produced by hot melt extrusion, that offers controlled release of lidocaine. However, there are concerns with the physical stability of this system and this has led to the development of new technologies by QUB and the University of Auckland (Patent applied for) in which the stability of lidocaine is enhanced through the use of eutectic technologies.

This PhD project will extend this research by developing a system in which lidocaine and ibuprofen are codelivered from a biodegradable extruded platform. Notably this system offers two significant improvements. Firstly, the combined release of two therapeutic agents, physically stabilised by eutectic technologies, will offer clinical advantages in pain release. Secondly the use of biodegradable platforms will avoid the need for retrieval of the exhausted device.

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How to Apply

Postgraduate applications should be made using Queen's University [Direct Applications Portal](#). Please note that there are two application processes: one for admission to the university and another for postgraduate awards.

Further Information

Additional information for prospective postgraduate students can be found on the [School of Pharmacy website](#) and the [Queen's Postgraduate website](#).