



UEL Research & Knowledge Exchange Conference 2013

Call for Abstracts

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| Name & Title of Presenter: | Dr Samir Ayoub |
| School: | Health, Sport and Bioscience |
| Co investigators: | |
| Title of Abstract: | New and novel uses for paracetamol |
| Key Theme/ Key words: | Paracetamol, hypothermia, stroke, cardiac arrest |

Abstract (No more than 400 words):

Paracetamol is used clinically for the treatment of pain and fever. Recent investigations in experimental animals confirmed paracetamol is able to induce potent hypothermia, which is self-reversible and does not lead to any long term toxicities. In this investigation, the authors sought to investigate the mechanism through which paracetamol induces hypothermia in experimental animals. The authors present strong scientific evidence, which demonstrate that the paracetamol-induced hypothermia is mediated through inhibition of the activity of the novel cyclooxygenase (COX) enzyme, COX-3. Further investigations confirm that the paracetamol induced hypothermia is not dependent on interactions with the endocannabinoid or transient receptor potential vanillid-1 (TRPV-1). In addition, co-administration of paracetamol with a cannabinoid agonist resulted in synergistic hypothermia. These data provide a strong rationale for the use of paracetamol along with a cannabinoid agonist for the induction of therapeutic hypothermia in the clinic. Hypothermia is induced for therapeutic purposes in critically ill patients presenting to the clinic with stroke, cardiac arrest or neurotrauma. However, the current approaches used for the induction of therapeutic hypothermia are inefficient, slow and can only be performed in the hospital setting. Most of the neuronal damage takes place during the first hour following the development of critical illness. Having provided evidence on the mechanism of paracetamol-induced hypothermia and the fact that paracetamol and cannabinoid agonists induced synergistic hypothermia, we propose that combination therapy can be translated to the clinic for the induction of therapeutic hypothermia. The advantages that drug-induced therapeutic hypothermia offer over the currently used methods for the

induction of therapeutic hypothermia include fact onset of hypothermia; within a few minutes as opposed to 30-60 minutes. This approach offers a cheap and readily available method for the induction of therapeutic hypothermia that has the potential of saving thousands of lives.