

International Conference on

ANATOMY AND PHYSIOLOGY

August 11-13, 2016 Birmingham, UK

Molecular mechanisms of the analgesic effect of alpha 2 adrenergic agonists

G Attarzadeh-Yazdi¹, E Houshmand¹ and M Jahanshahi²¹Hormozgan University of Medical Sciences, Iran²Golestan University of Medical Sciences, Iran

Pain is an issue that millions of people worldwide are suffering from and today lots of money is spent for its treatment. It has been shown that Alpha-2 adrenergic agonists have main role in analgesia. Also, it has been shown that potassium channels play an important role in the analgesic mechanism of alpha-2 adrenergic receptor agonists. The aim of this study was investigating the role of specific potassium channel (large conductance calcium and voltage-activated potassium channels, BK) in analgesia induced by alpha-2 adrenergic receptor agonists. For this purpose, in the present study, 56 male Wistar rats weighing 250-300 g were selected and divided into 7 groups. The groups are, 1: Intraperitoneal injection (IP) of Normal Salin 1 ml/kg; 2: IP injection of Clonidine 0.7 mg/kg; 3: IP injection of Yohimbine 1 mg/kg; 4: IP injection of Yohimbine 1 mg/kg then Clonidine (IP with dose 0.7 mg/kg); 5: Intracranial (ICV) of Yohimbine 5 µg/kg; 6: ICV injection of Yohimbine 1 mg/kg then Clonidine 0.7 mg/kg; 7: ICV injection of Iberiotoxin 100 nm then Clonidine (IP with dose 0.7 mg/kg). Saline and DMSO was used as solvent. Chronic pain was checked by using formalin test (Subcutaneous, SC, injection of formalin with dose of 2%). Our results showed that IP injection clonidine reduced chronic pain. The results also showed that injection of IP and ICV of Yohimbine as Alpha-2 adrenergic antagonist can block the analgesia induced by clonidine ($p < 0.001$). Then, it showed that Alpha-2 adrenergic has main role in pain induced by clonidine. Iberiotoxin, as BK channel Blocker, showed analgesia affects on chronic pain and it can affected by clonidine ($p < 0.001$). The results showed that Alpha-2 adrenergic receptor agonist causes analgesia in animals and this effect can be reversed by using Alpha-2 adrenergic receptors antagonists (Yohimbine). Results showed that Alpha-2 Adrenergic receptors have specific role in analgesia. To find out the molecular mechanism of Alpha-2 Adrenergic receptors our data, with using BK potassium channels, revealed that the Bk channels are one of the mechanism of Alpha-2 adrenergic receptors for inducing pain.

Biography

G Attarzadeh-Yazdi is a PhD student and Researcher in Physiology department, Hormozgan University of Medical Science, Iran.

gattarzadeh@yahoo.com

Notes: