Abstract

Pancreatic Cancer (PaCa) is the 5th leading cause of cancer-related death in the UK. Understanding the signalling behind PaCa development is essential to create novel treatment for PaCa. RAMPs are family of single transmembrane domain proteins. The interaction between RAMP and GPCR give rise to AM receptor complex. AM is a hormone that has been shown to promote progression of various tumours including PaCa. This study was conducted to understand the role of RAMPs family in PaCa. The result showed that RAMPs were expressed at mRNA and protein levels in two PaCa cell lines, BxPC-3 and CFPAC-1. The optimization of seeding densities, FCS concentration, and transfection conditions were established prior to conducting RAMPs knockdown using siRNA. The efficacy of siRNA-mediated knockdown at mRNA and protein level were validated using qPCR and western blot, respectively. Subsequently, the effect of knockdown towards PaCa metabolic activity and apoptosis were assessed. Results showed knockdown of RAMPs did not exert significant effect on PaCa cell metabolic activity ($p=0.1$). However, it did affect PaCa cell apoptosis, as evidenced by remarkable increase in Caspase 3/7 level by 450% and 570% for knockdown RAMP1 and 2, respectively. Hence, it indicates the role of RAMP1 and 2 are important in maintaining cancer survival by reducing their apoptosis rate.

Keyword: Receptor-Activity Modifying Proteins (RAMPs), Adrenomedullin (AM), Pancreatic Cancer (PaCa)