Detection of PLC-ζ from testis of Rattus argentiventer(rice-field rat) using RT-PCR and qRT-PCR

ABSTRACT

Rattus argentiventer (Rice Field Rat) is responsible for destruction of paddy. The mammal is known for its rapid reproductive potential which can be a target for biological control of this species. Phospholipase C-zeta (PLC ζ) is a specific enzyme found in sperm of mammals responsible for triggering calcium oscillations leading to egg activation during fertilization. It facilitates the first step of egg activation causing egg division and subsequent development into an embryo. The method used in this study was to identify PLCζ gene fragments from the testis of Rattus argentiventer using two-step Reverse Transcriptase Polymerase Chain Reaction (PCR) and quantified with Real Time Reverse Transcriptase Polymerase Chain Reaction (qRT-PCR). Following that, sequencing of PLCζ was performed. The identified sequence was then keyed in into the BLAST portal in NCBI (National Centre of Bioinformatics) for comparison with a standard PLCζ sequence from Rattus norvegicus for sequence alignment. The result showed that PLCζ was present in Rattus argentiventer and qRTPCR could quantify the amount of PLCζ available.As such this would give additional information of detection and quantification techniques for rapid identification and detection of PLCζ to be carried out in the approach of controlling the rapid growth of Rattus argentiventer population.

Keyword: Phospholipase C-zeta (PLCζ); Rattus argentiventer; Testes; RT-PCR; qRT-PCR