The role of long non-coding RNA RAMS11 in promoting colorectal cell development and metastasis

Md Zahirul ISLAM KHAN, Helen Ka Wai LAW*

Department of Health Technology & Informatics, Faculty of Health & Social Sciences, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong SAR, China

BACKGROUND

Over the past decades, accumulating research evidence revealed that abnormal expressions of long noncoding RNAs (lncRNAs) are associated with tumour initiation, progression, metastasis, and resistance to cancer therapies. Therefore, lncRNAs are considered to be potential biomarkers for many cancer types. In the current study, we examined the expression and molecular mechanisms of a newly identified lncRNA called RAMS11 (RAMS11) and its association with the development of colorectal cancer (CRC).

METHODS

Quantitative RT-PCR was used to determine the expression of RAMS11 in 4 CRC cell lines (DLD-1, HT-29, HCT-116, and SW480) and normal colon cells CCD-112-CoN. To evaluate the biological and physiological functions of RAMS11 in CRC cells, CCK-8 cell proliferation assay, colony formation assay, and wound healing migration assay were performed after RAMS11 knockdown. The expressions of autophagy/apoptosis/mTOR/epithelial-mesenchymal transition (EMT) pathway proteins were determined by Western blotting to evaluate the molecular mechanisms of RAMS11 in CRC cells.

RESULTS AND DISCUSSION

We found that RAMS11 was significantly upregulated in CRC cell lines compared to the normal cells. The knockdown of RAMS11 reduced CRC cells proliferation, and migration through mTOR dependent induction of autophagy, promotion of apoptosis, and inhibition of EMT process.

CONCLUSIONS

Overall, our results suggested that RAMS11 is an important oncogenic regulator of CRC initiation and progression whereas, targeting RAMS11 and the related molecular pathways could be used as potential therapeutic strategies for CRC management.

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CONTACTS

Presenting author: Md Zahirul ISLAM KHAN
Corresponding author: Dr. Helen Ka Wai LAW
Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong SAR, China.
Email: htelen@polyu.edu.hk
Tel: (852) 3400-8562
Fax: (852) 2362 4365