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News & Comments

Novel promising therapeutic agent for liver cancer

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Tripartite Motif 54 (TRIM54) is a member of the TRIM family, which is distinguished by the presence of one or two b-boxes (B1/B2), a coiled-coil domain, and a conserved N-terminal tripartite motif made up of a RING domain. Among these, the N-terminal tripartite motif gives TRIM family members E3 ligase activity. Proteins can participate in a variety of biological processes by undergoing post-translational modifications (PTM), which regulate the target proteins' activity, stability, and subcellular localization. Additionally, we looked at the relationship between OTUB2 and TRIM54 and examined the functional impact of the OTUB2/TRIM54 axis on the proliferation of liver cancer cells using online database prediction and cell assays. In conclusion, this study demonstrates a novel mechanism of the OTUB2/TRIM54 axis in the biological behaviours of liver cancer cells.

The research plan followed the guiding principles of the World Medical Association Declaration of Helsinki and was approved by the ethics committee of Ningbo First Hospital. The Ningbo First Hospital provided the liver cancer samples and comparable surrounding normal tissues (n = 4). To preserve tissue samples for future investigation, they were instantly frozen in liquid nitrogen and kept at! 80 EC. The American Type Culture Collection (Manassas, VA) provided the MHCC97-H and MHCC97-L cells, which were then grown in high glucose Dulbecco's Modified Eagle Medium (DMEM) with 10% Fetal Bovine Serum (FBS; Serana, Germany) at 37 EC with 5% CO2. The transfected MHCC97-H and MHCC97-L cells were treated with a 200 L sterile pipette tip to create a scratch to analyse migration. The assessment of liver cancer cell invasion included the Trans well assay. In 100: L of complete media including 0.2: L of EDU working solution, MHCC97-H and MHCC97-L cells were introduced (CW Biotech).

Using RIPA lysis buffer (Beyotime Biotechnology, Shanghai, China), total proteins were extracted from tissues and cells. The chosen plasmids were transfected into cells and placed on 10 cm plates. The cells received the appropriate plasmid transiently, and it was kept there for 48 hrs. The statistical program SPSS 20.0 (Chicago, USA) was used to conduct the analysis.

It was discovered that TRIM54 was substantially higher in liver cancer tissues than in healthy tissues. TRIM54 was overexpressed in MHCC97-H and MHCC97-L cells to evaluate the functional impact of the protein on the growth of liver cancer cells. MHCC97-H and MHCC97-L cells were co-transfected with OTOU2 shRNA plasmids and TRIM54 overexpression plasmids to further investigate if OTUB2 regulates liver cancer cell progression in a TRIM54-dependent manner. The findings of this study showed that

TRIM54 was overexpressed in liver cancer tissues and those high levels of TRIM5 expression were linked to poor prognoses in liver cancer patients. Furthermore, liver cancer cells' proliferation, migration, and invasion were aided by TRIM54 overexpression.

In conclusion, the study showed that excessive expression of TRIM54 for individuals with liver cancer indicates a worse prognosis and OTUB2 could increase TRIM54's protein stability using ubiquitination as a technique to encourage liver cancer cells' growth and invasion.

JOURNAL REFERENCE

Wang, A., X. Chen, D. Li, L. Yang and J. Jiang, 2022. Deubiquitylating enzyme OTUB2 promotes the progress of liver cancer cells by stabilizing TRIM54. Int. J. Pharmacol., 18: 633-643.

KEYWORDS

Deubiquitylating, liver cancer, otubain2, tripartite motif-containing, cell proliferation, migration, invasion