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A Novel Direction toward the Therapy of NPC

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Nasopharyngeal Carcinoma (NPC) is a malignant tumour that develops in the mucosal epithelium of the nasopharyngeal area and is mostly found on the top and sidewalls of the nasopharyngeal area, particularly the pharyngeal recess. NPC's occurrence and progression are fundamentally linked to Epstein-Barr (EB) virus infection, genetic, and environmental variables, and it is distinguished by regional and ethnic variances.

Matrine (molecular formula: C15H24N2O), an alkaloid, is extracted from the dried roots, plants, and fruits of the legume Sophora *flavescens*, as well as other species like Sophora *alopecuroides* and Sophora *subprostrata*. According to new research, 46 different types of traditional Chinese medicines have contributed to the inhibition of tumours or worked as chemo-sensitizers in influencing cancer cell metabolism. Autophagy is divided into three types based on the methods through which cellular components are delivered to the lysosome: large autophagy, tiny autophagy, and chaperone-mediated autophagy. Given the apparent importance of matrine in the progression of various malignancies, hope to uncover the functional role of matrine in NPC cell apoptosis and autophagy, as well as examine the combined therapeutic effect of matrine and DDP on NPC.

The study was carried out at the Department of Otolaryngology, The First Affiliated Hospital of Jinan University. The American Type Culture Collection (ATCC, USA) provided the NPC cell lines HONE1 and SUNE1, which were grown in RPMI-1640. HONE1 and SUNE1 cells were divided into the following groups at logarithmic growth stages: control (DMSO), matrine (0.25, 0.50, and 1.00 mg mLG^{-1}), DPP (0.2 mg LG^{-1}), combined group (DPP+1.00 mg mLG^{-1} matrine, DPP+0.50 mg mLG^{-1} matrine, DPP+0.25 mg mLG^{-1} matrine), and combined group (DPP+1.00 mg mLG^{-1} matrine, DPP+. A CCK-8 assay was used to determine the vitality of the cells. HONE1 and SUNE1 cells were placed on a 6-well plate for 2 weeks of incubation to determine cell viability. A TdT-mediated dUTP nick-end labelling (TUNEL) apoptosis detection kit (Sigma Aldrich, St. Louis, MO, USA) was used to assess cell apoptosis. HONE1 and SUNE1 cells were plated in a 6-well plate and incubated for 16 hrs following the appropriate methods to conduct a wound-healing experiment. All statistical analyses in this study were completed using GraphPad prism (version 5.01) and displayed as Mean Standard Deviation (SD).

Matrine effectively decreased the viability of the HONE1 and SUNE1 cells, in a concentration-dependent way, when compared to a control group. The wound healing experiment was used to investigate NPC cells' migration and invasion after co-treating with matrine and DPP, and it was found that matrine reduced the wound width blocked by DPP of HONE1 and SUNE1 cells in a dose-dependent manner. Traditional Chinese medicine has been widely used in the treatment of a variety of cancers, including Kaempferol in prostate cancer, Sinomenine in hepatic carcinoma, and astragaloside

in gastric cancer, according to a growing number of references. The inhibitory effect of matrine on NPC cell proliferation, migration, and invasion, as well as the promoted impact on apoptosis rate and autophagy progress, were discovered in this study. Matrine's inhibitory effect on NPC cell progression and autophagy was confirmed, and it was discovered that matrine could exacerbate DPP's impairment on NPC cell proliferation, migration, and invasion, providing rational evidence to consider the combination of DPP and matrine as a potential chemotherapy method for NPC treatment.

To summarize, it is found that matrine inhibited NPC cells' proliferation, migration, and invasion in a dose-dependent manner while increasing their death and autophagy rate.

JOURNAL REFERENCE

Wang, H., H. Lin, T. Zhang and H. Jia, 2022. Matrine intensifies the sensitivity of cisplatin in NPC cells via mTOR-mediated autophagy. Int. J. Pharmacol., 18: 388-397.

KEYWORDS

Nasopharyngeal Carcinoma, Epstein-Barr, inhibitory effect of Matrine, potential chemotherapy method, NPC treatment