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hsa-microRNA-202-3p's Upregulation in Type 1 Gastric Neuroendocrine Neoplasm and its Target Gene

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BACKGROUND: Although there have been a few previous miRNA studies about type 1 g-NENs, there are still many other miRNAs and target genes waiting to be discovered and studied. The molecular mechanism of this disease remains largely unknown. This study assessed differences in miRNA expression between type 1 g-NEN tissues and non-tumour tissues and identified relevant target genes, with the aim of discovering the possible molecular mechanism of type 1 g-NEN recurrence.

METHODS: Tumour tissues from patients with type 1 g-NENs were used as experimental samples, and gastric mucosal tissues from the same patients obtained during gastroscopy review after several months were used as control samples. miRNA expression was examined with Agilent human miRNA chips and validated via RT-PCR. Three types of target gene prediction software (TargetScan, PITA, microRNAorg) were used to predict potential target genes of the differentially expressed miRNAs, and a dual-luciferase reporter assay system was used for verification.

RESULTS: Six miRNAs were significantly upregulated or downregulated in the tumours compared to the control samples. Among them, miR-202-3p was extraordinarily upregulated. RT-PCR of seven sample sets confirmed that miR-202-3p was upregulated in tumour tissues. In total, 215 target genes were predicted to be associated with miR-202-3p. Among them, dual-specificity

phosphatase-1 (DUSP1) was reported to be closely related to tumour occurrence and development. The dual-luciferase reporter assay showed that miR-202-3p directly regulated DUSP1 in 293T cells.

CONCLUSION: miR-202-3p is upregulated in type 1 g-NEN lesions and might play important roles in the pathogenesis of type 1 g-NENs by targeting DUSP1.