

MiR-7 has a role in behaviour of somatotroph adenomas

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Purpose

Insulin-like growth factor receptor 1 (IGF1R) and epidermal growth factor receptor (EGFR) are receptors tyrosine-kinase (RTK) whose altered signaling is critical in the development of many types of tumors. These RTK are some of the main targets of the microRNA (miRNA) miR-7. miR-7 is an important tumor suppressor miRNA. It has the ability to inhibit the motility, invasiveness and anchorage-independent growth, suggesting a strong therapeutic potential in many types of cancer. Pituitary adenomas (PA) are a heterogeneous group of tumors with diverse clinical behaviour in whom the study of miRNA network has scarcely studied.

The **aim** of this study was to investigate the role of miR-7 in the behaviour of different PA subtypes.

Methods

In this cross-sectional descriptive study, we evaluated miR-7 by qRT-PCR on 60 human PA: 29 gonadotrophs (GT), 15 somatotrophs (ST), 8 functioning corticotroph (CT) and 8 silent corticotroph adenomas (SCA). 9 healthy pituitary from autopsies were used as calibrator reference. We graded aggressiveness according to invasiveness and Ki-67 gene expression: **high**:Hardy's grade IV and Ki-67 >2.59 fold change (FC); **medium**: Hardy's grade IV or Ki-67 >2.59 FC, and **low**: Hardy's grade <IV and Ki-67 <2.59 FC.

Results

MiR-7 showed different expression levels depending on PA subtype, with its lower expression in CT (figure 1). MiR-7 expression patterns showed also significative differences depending on PA subtype (p(K-W)=0.002), although they were similar in non-functioning tumors (GT and SCA) (figure 2). Even though ST were the adenomas with highest expression of mir-7 (figure 3), in 33 % of ST the expression was repressed. This miR-7 repression entailed a risk of aggressiveness of 7 (2-25) times (pχ²= 0.038). We did not find associations with tumour extension or aggressiveness in the other PA subtypes.

Figure 2. miR-7 expression patterns in PA subtypes

Figure 1. miR-7 expression levels in PA subtypes

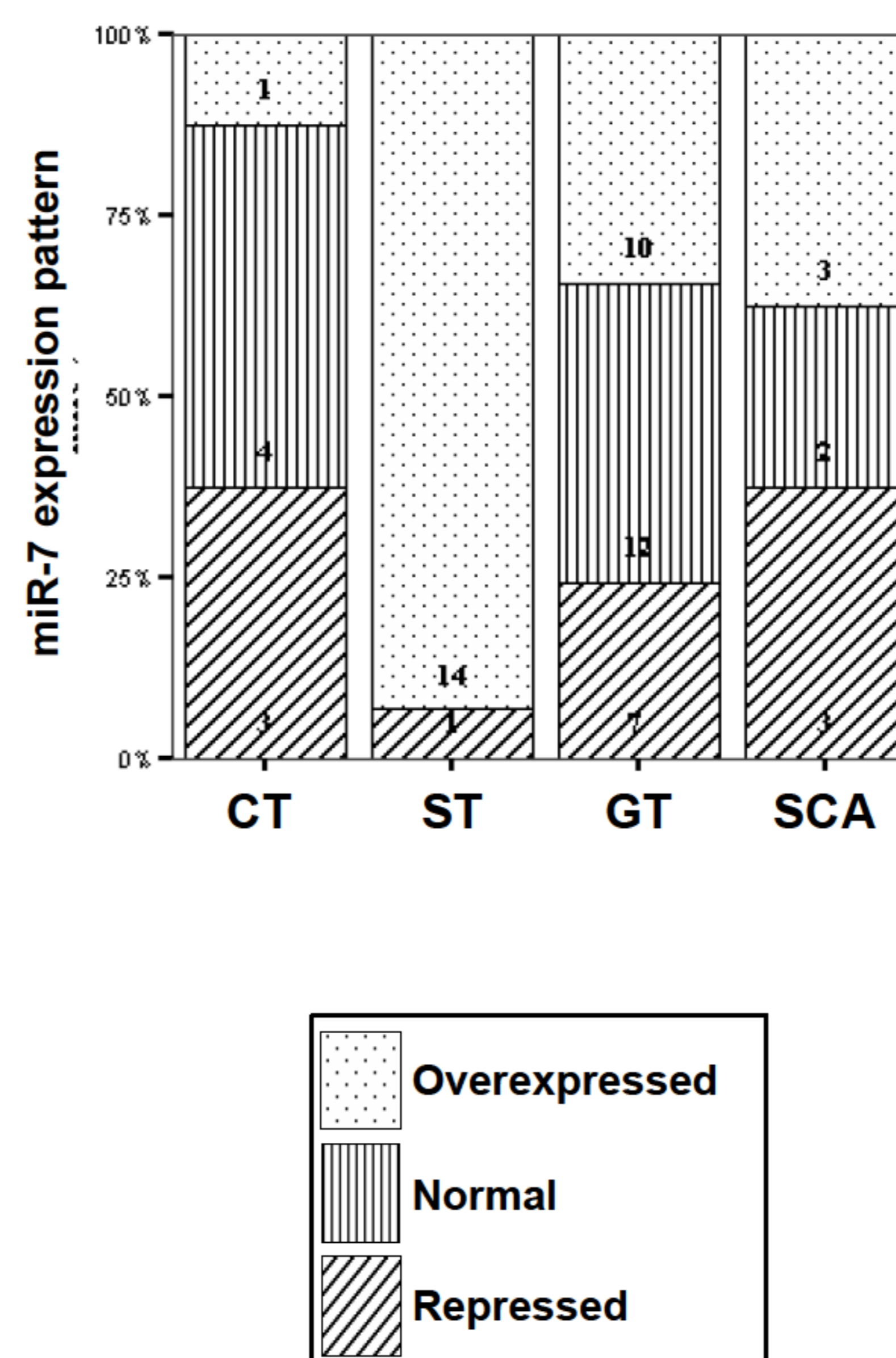
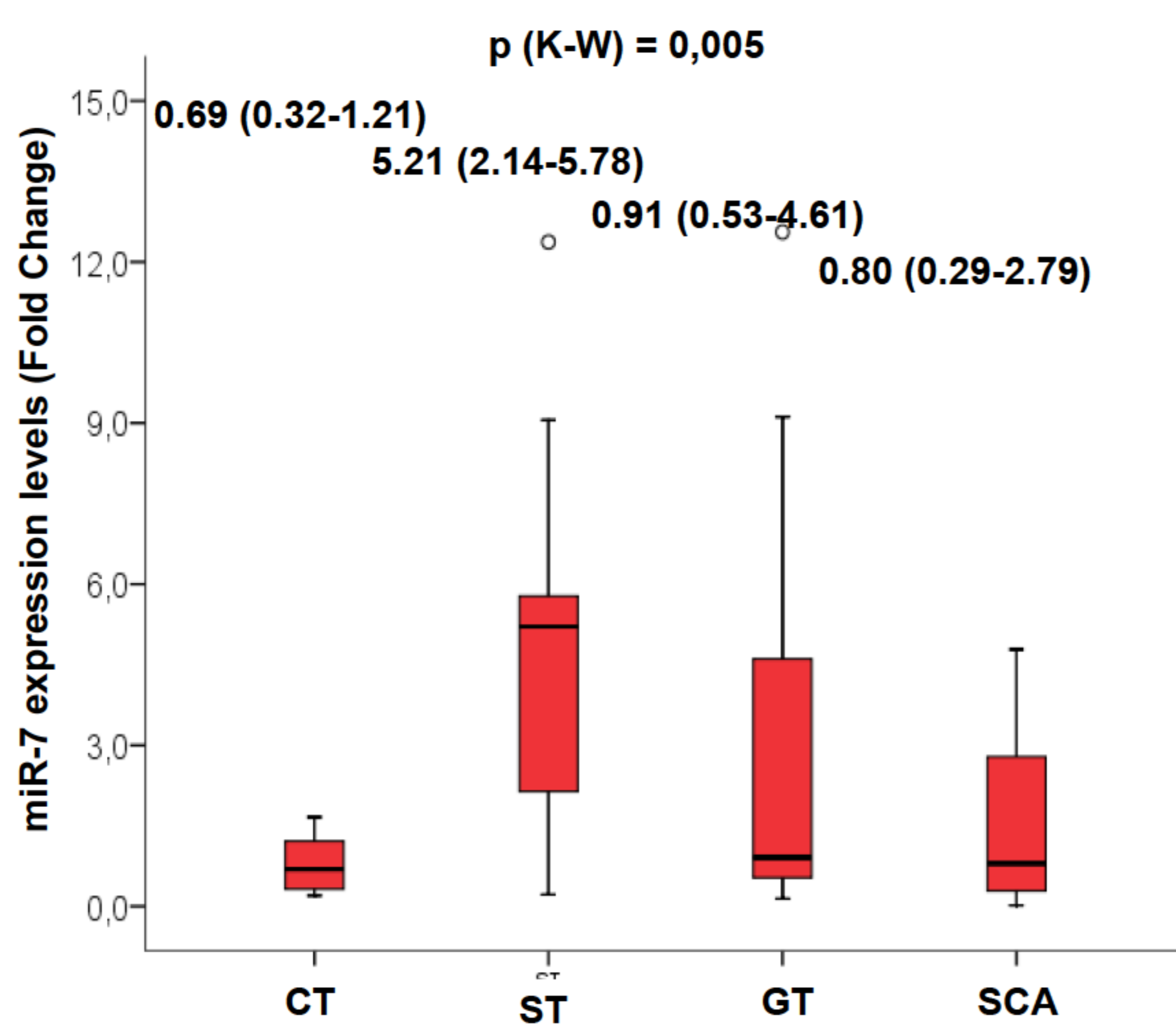
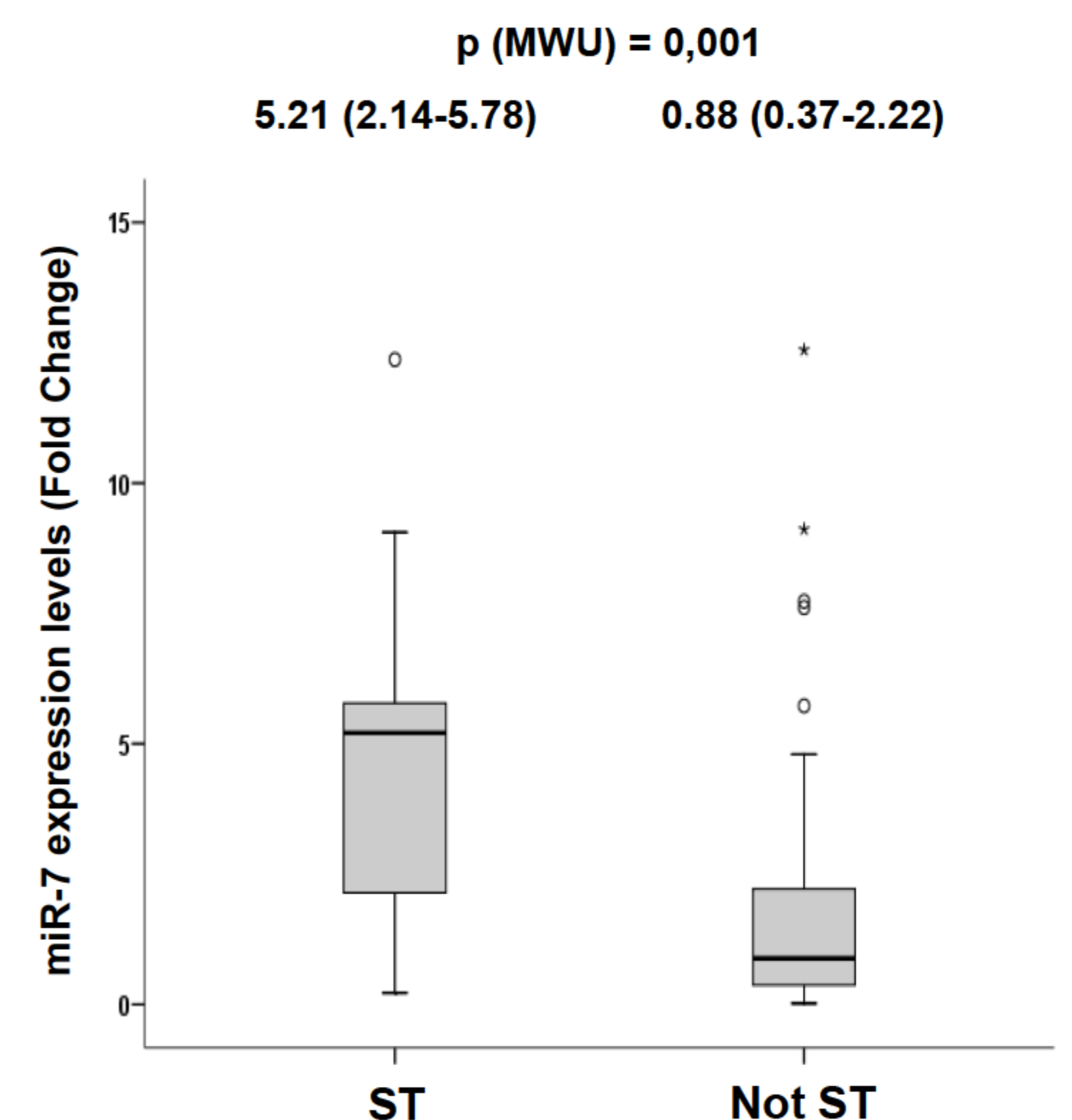


Figure 3. miR-7 expression (fold change) in ST



Conclusions

According with our results, miR-7 plays an important role in the behaviour of ST, acting as tumor suppressor miRNA, probably contributing to control its growth. That open the door to a new potential therapeutic approach.