

Increased GTRAP3-18 expression by miR-96-5p is mediated by a RNA-binding protein

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Glutathione (GSH) plays a key role in antioxidant system especially in the brain. Decreased GSH levels are known to be associated with neurodegenerative diseases. We previously reported that an inhibitor of miR-96-5p, which regulates neuronal GSH synthesis through regulating the protein levels of excitatory amino acid carrier 1 (EAAC1), contributed the neuroprotection against oxidative stress. In this study, we focused on GTRAP3-18, the negative regulator of EAAC1, as a new target of miR-96-5p.

Since GTRAP3-18 was predicted to be indirectly regulated by miR-96-5p, we have tried to identify the GTRAP3-18 regulator which mediate the miR-96-5p regulation using mass spectrometry analysis. And then, we have tested whether these candidate proteins could directly regulate the expression of GTRAP3-18.

The result shows that GTRAP3-18 is up-regulated by miR-96-5p because one of the RNA-binding proteins (RBPs), which is directly regulated by miR-96-5p, negatively regulates the GTRAP3-18. Furthermore, the knockdown of this RBP expression by the specific siRNA transfection increased the expression of GTRAP3-18.

These findings indicate that the regulation of GTRAP3-18 by miR-96-5p is mediated by the RBP.