

Presence of TFF 1 and 3 in the nervous tissue of developing mouse fetus

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INTRODUCTION

Trefoil factor family comprises three small proteins (TFF1, TFF2 and TFF3) predominantly found in mucous epithelia of gastric system. They are also found in epithelia of respiratory tract, uterus, conjunctiva, thyroid gland, salivary glands and, in addition, their expression is deregulated in numerous tumors. TFFs participate in apoptosis, cell migration and immune response by acting through various mechanisms [1,2]. Both TFF1 and TFF3 are found in the nervous system, but to a much lower extent than in the mucous epithelia. Significant sites of TFF1 expression are in hippocampus, frontal cortex and cerebellum, and of TFF3 in hypothalamus, amygdala and hippocampus [3]. Recent research shows TFF3 to be a neuropeptide that facilitates learning, object recognition and retention of memory [4, 5]. The aim of this research was to determine the presence of TFF 1 and TFF 3 in the nervous system of developing mouse fetus.

MATERIALS AND METHODS

CD1 mouse fetuses, days 15 to 17 were isolated, fixed in 4% paraformaldehyde and paraffin embedded. Sagittal 6µm sections were mounted on adhesive slides, processed for immunohistochemistry and incubated with anti-TFF1 or anti-TFF3 primary polyclonal rabbit antibodies followed by biotinylated anti rabbit secondary antibody and streptavidin HRP layer with final exposure to DAB. Counterstaining was performed using hematoxylin.

RESULTS

Presence of TFF1 and 3 was detected in different parts of nervous system of mouse fetuses. TFF1 was found in the cytoplasm of spinal ganglion cell somata and those of the grey matter of spinal cord [Figure 1], while TFF3 was present both in the cytoplasm and the nucleus of the same cells [Figure 2]. Positive staining for TFF3 was also detected in cytoplasm and nucleus of neurons occupying different nuclei of brain and medulla oblongata.

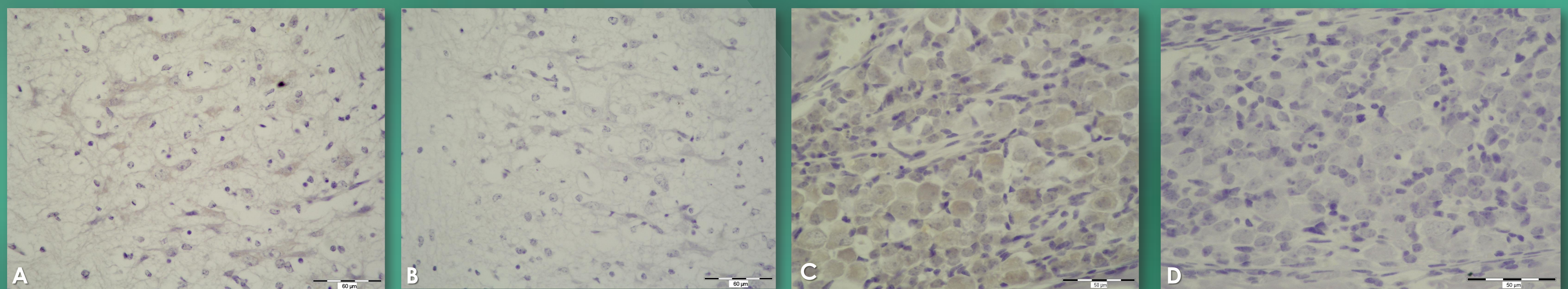


FIGURE 1. A) Spinal cord grey matter neurons showing cytoplasmic presence of TFF1. 17-day old mouse fetus. B) Negative control. C) Spinal ganglion cells showing presence of TFF1. 15-day old mouse fetus. D) Negative control.

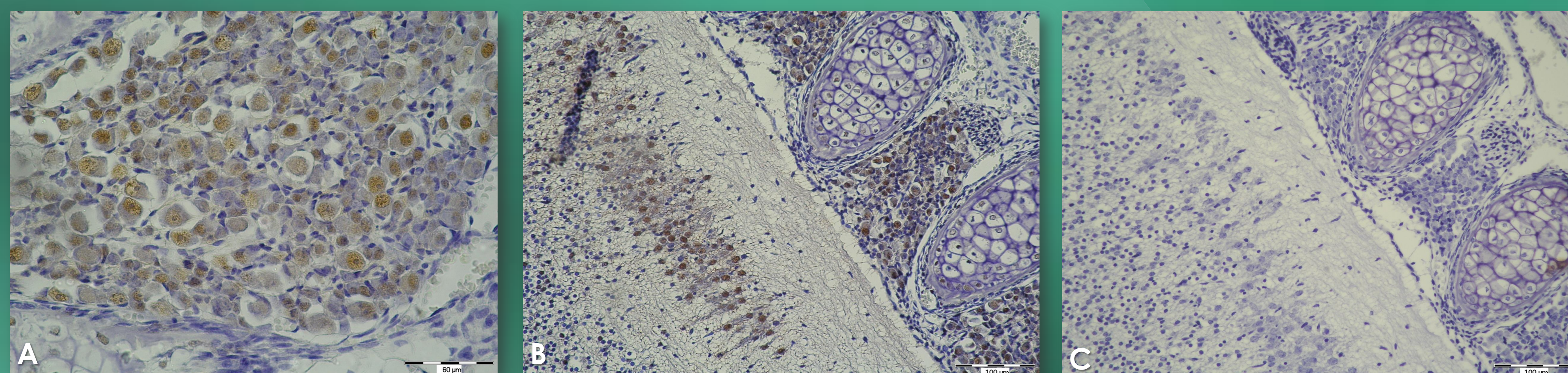


FIGURE 2. A) Spinal ganglion cells showing presence of TFF3 in the cytoplasm and nuclei. 15-day old mouse fetus. B) Neurons in spinal cord and spinal ganglia positive for TFF3. 15-day old mouse fetus. C) Negative control.

CONCLUSION

Trefoil factors 1 and 3 are present in different parts of nervous system of developing mouse. However, their role in the nervous system is still not fully understood. TFF proteins might be involved in the complex processes of nervous system development and brain plasticity. These preliminary results suggest further research in order to elucidate these peptides' features in the nervous tissues.

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