Localization of trefoil factor family peptide 1 and 3 in epithelial tissues originating from all three primary germ layers of developing mouse embryo

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INTRODUCTION

Trefoil Factor Family (TFF) peptides are involved in the maintenance of epithelial integrity, and are important for epithelial restitution upon injury. Mature epithelial tissues originate from different primary germ layers in an embryo. Our aim was to investigate the presence and localization of TFF1 and TFF3 peptides in epithelial tissues of mouse embryo.

MATERIALS AND METHODS

Mouse embryos, day 14 to 18 were isolated and fixed in 4% paraformaldehyde. Paraffin blocks were made, cut into 6µm slides, and processed for manual immunohistochemical staining (LSAB method). Primary polyclonal, affinity purified rabbit anti-TFF1 and anti-TFF3 antibodies were used, and PBS as a negative control. Counterstaining was performed using hematoxylin.

RESULTS

TFF1 and TFF3 were present in different epithelial tissues, including stratified epithelia of the developing skin and vestibulum of the oral cavity, gastric mucosa, intestinal and respiratory mucosa, pancreatic tissue and kidney tubules, with their occurrence depending on the stage of embryonic development and differentiation of the tissue. Although often coinciding with the maturation of the epithelial cells, in some cases (epidermis, stomach and respiratory mucosa) their presence was detected while the epithelium was still immature. Localization of TFF1 and TFF3 peptides in embryonic epithelial tissues did not show germ layer-specific distribution.

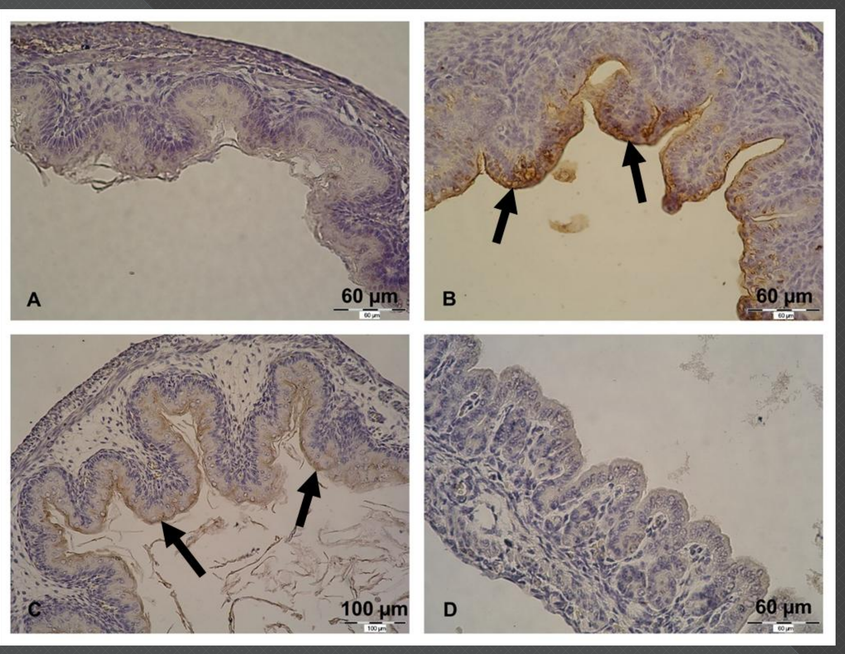

Figure 1. TFF1 (A and B) and TFF3 (C and D) in the gastric mucosa of 18 day-old mouse embryo. A and C: aglandular stomach; B and D: glandular stomach

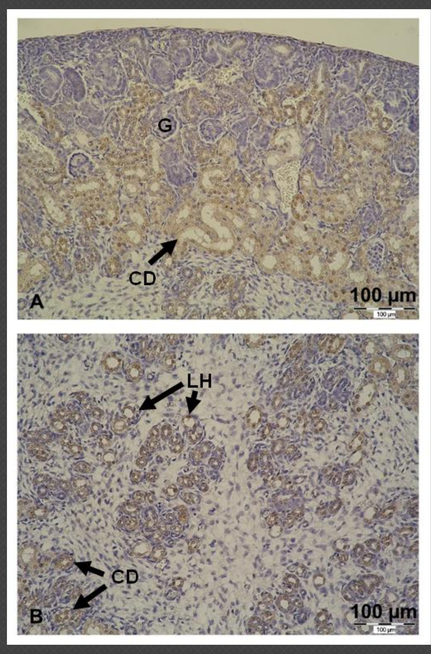

Figure 2. TFF1 in the kidney cortex (A) and medulla (B), 17 day-old mouse embryo. G: glomerulus, CD: collecting duct, LH: loop of Henle

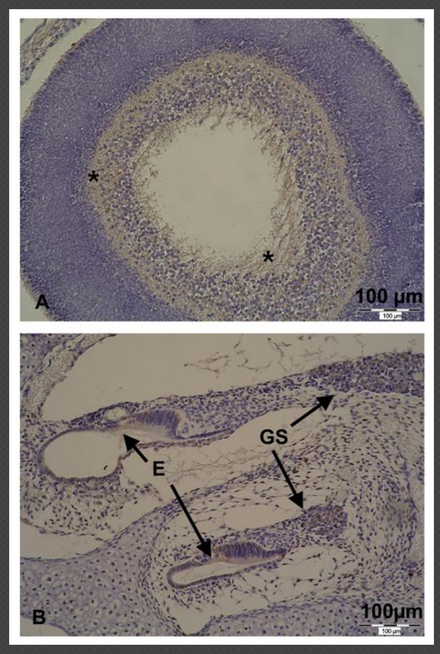

Figure 3. A: TFF1 in the developing retina; B: TFF 3 in cochear epithelium (E) and *ganglion spirale* (GS). 17 day-old mouse embryo.

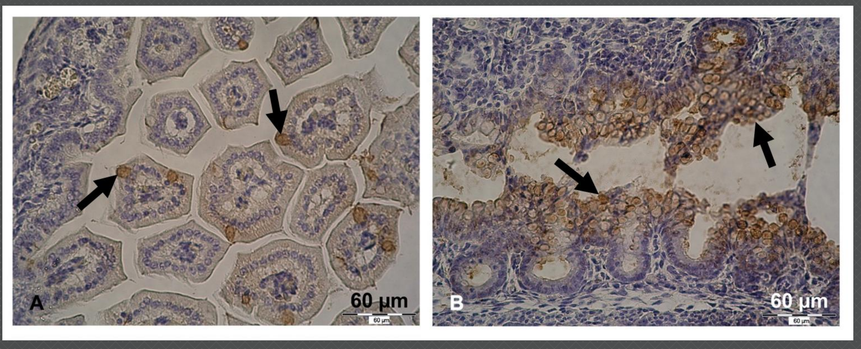

Figure 4. TFF3 in the mucosa of small intestine (A,17 day-old mouse embryo) and colon (B, 18 day-old mouse embryo)

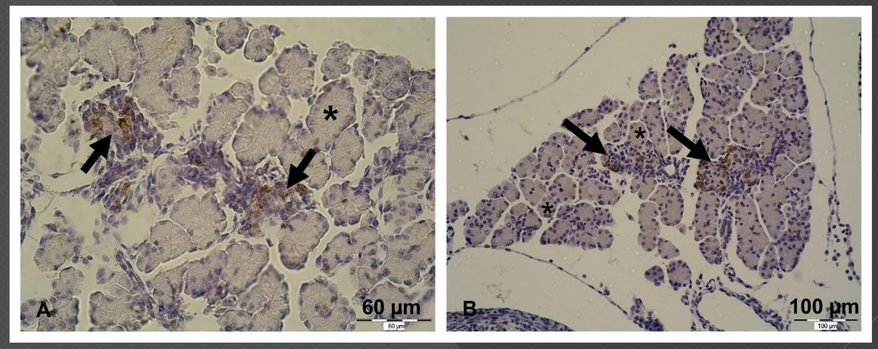

Figure 5. TFF1 (A) and TFF3 (B) in the tissue between the pancreatic acini (18 and 17 day-old mouse embryo, respectively).

CONCLUSION

TFF1 and TFF3 promote migration of epithelial cells, participate in immune response, and affect apoptosis. Since epithelial tissues are characterized by active proliferation and TFF1 and TFF3 peptides are present in various epithelial tissues during embryonic development, they could play important roles in these tissues, and in some cases may even contribute to the differentiation of specific cells. Also, TFF1 and TFF3 may be considered markers of mucosal cells maturation.

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