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## GLYCAN COMPOSITION OF BRUNNER'S GLANDS OF THE DONKEY DUODENUM

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Brunner's glands, also known as duodenal glands, are specific to mammals and are located in the submucosa of the duodenal wall. However, in pigs and large herbivores, they can be found, albeit discontinuously, in the jejunum [1]. The ducts of individual glands pass through the smooth muscle layer of the muscularis mucosae and usually unite with the bottoms of overlying intestinal glands (crypts of Lieberkühn). Brunner's glands secrete highly glycosylated proteins that constitute a viscous mucus that protects the mucosa from mechanical insults, neutralizes the acidity of the gastric juice, modulates the absorption of ingesta, inhibits the attack of pathogens and maintains the bacterial microflora [1]. The traditional methods used in glycohistochemistry, such as PAS and Alcian blue stainings, indicate a constant presence of both neutral and acidic types in the mucins secreted by Brunner's glands [1]. On the contrary, glycomic analysis by lectin histochemistry of Brunner's glands from different mammals has shown a diversity of species-specific carbohydrate residues of secreted glycoproteins [1]. As for the Perissodactyla, the only published report on the glycan profile of Brunner's glands involved horses [1]. The present study examined the carbohydrate composition of glycans produced in the Brunner's glands of donkeys, which has not been investigated to date. Duodenal tissue fragments from adult healthy male donkeys were fixed in 4% (w/v) PBS-buffered paraformaldehyde, embedded in paraffin wax, and stained with a panel of twelve HRP labeled lectins (Con A, DBA, GSA I-B4, GSA II, HPA, LTA, PNA, MAL II, PNA, SBA, SNA, UEA I), in combination with saponification and sialidase digestion (Ks). The lectin-binding profiles of the secretory cells of Brunner's glands showed both N- and O-linked glycans. N-glycans were evidenced with Con A and SNA that react with high-mannose glycans and α1,6-linked sialic acids, respectively. O-linked glycans were characterized from terminal N-acetilgalactosamine (GalNAc) residues (HPA, DBA, and SBA labelling), α2,3-sialylated galactose (Gal)β1,3GalNAc (KsPNA) and sialylated GalNAc (KsSBA). Additionally, glycans terminating with N-acetylglucosamine (GlcNAc), αGal, and α1,2-fucose were detected (reactivity to GSA II, KsWGA, GSA I-B4, and UEA I). No binding sites for LTA, PNA, and MAL II were found, indicating the absence of α1,3-fucosylated glycans and O-linked glycans terminating with Galβ1,3GalNAc, and sialic acidα2,3Galβ1,3(±sialic acidα2,6)GalNAc residues. Comparison of these results with those reported for the Brunner's glands of horses [2] reveals differences in the glycoproteins produced in the duodenal glands of these two species belonging to the genus Equus. The observed differences in glycan pattern could be related to the higher digestion efficiency of donkeys compared to other equids [3].

References

[1] Krause W.J. Brunner's glands: a structural, histochemical and pathological profile. Prog Histochem Cytochem 35:255–367, 2000; [2] Takehana K. et al. Histochemistry of complex carbohydrates in the horse duodenal gland. Jpn J Vet Sci 51:909-915, 1989; [3] Lamoot I. et al. Foraging behaviour of donkeys grazing in a coastal dune area in temperate climate conditions. Appl Anim Behav Sci 92: 93–112, 2005.

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