

# THE MORPHOLOGIC CHANGES IN THE GASTRIC WALL ASSOCIATED WITH PRENATAL DEXAMETHASONE ADMINISTRATION

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## Introduction

Synthetic glucocorticoids are commonly prescribed during pregnancy, even without systematic research regarding its potential impact on development of the gastrointestinal system. The ulcerogenic action of corticosteroids in the stomach is controversial. Moreover, prenatal exposure to corticosteroids influences the activity of the hypothalamic-pituitary-adrenal (HPA) axis in adulthood. Therefore, we thought of interest to characterize morphologically the stomach mucosa of adult rats that were submitted to prenatal dexamethasone (DEX) exposure.

## Methods

Pregnant Wistar dams (n=4) were exposed to the DEX (1mg/Kg) on days 18 and 19 of gestation. In DEX-treated (n=10) and CONT (n=8), pHmetry was carried out using a MI-414-4cm pH combination microelectrode probe. The gastric pH was recorded for each animal immediately before sacrifice. After sacrifice, a qualitative analysis of the mucosa of different regions of the stomach (fundus, body and antrum) was performed to screen for macroscopic alterations (ulcers). Subsequently, histological measures involving gastric wall, muscle layers and serosal thickness, were performed.

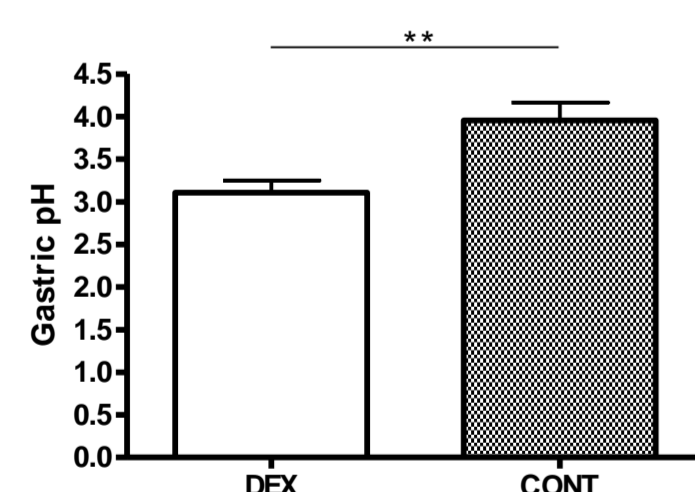
## Results

Table 1. Body Weight Evolution During the First 120 Days of Life

Treatment	PND 1	PND 10	PND 21	PND 30	PND 60	PND 120
DEX 1 mg/kg female animals	5,2a	20,3a	48,1a	93,4a	166,9a	249,9a
CONT female animals	6,7	29,3	64,3	100,9	186,9	281,5

aSignificantly different from control animals,  $p < 0.05$ .

Body weights (g) at PND 1, 10, 21, 30, 60 and 120 of offspring of vehicle (CONT), and high-dose dexamethasone (DEX; 1 mg/kg) treated pregnant rats. PND, postnatal day; CONT, vehicle; DEX, dexamethasone.



### Gastric pHmetry Measure

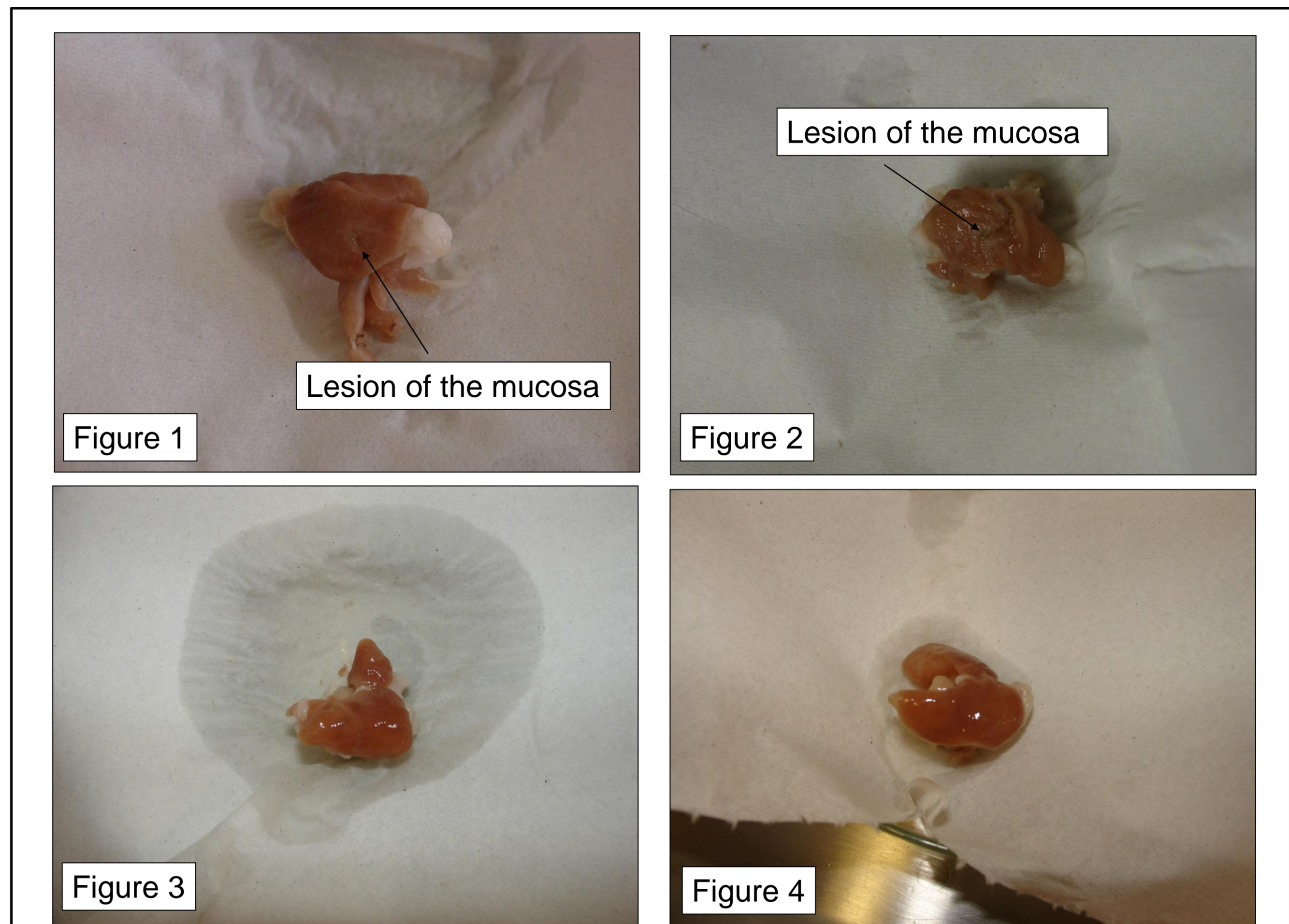
pH-metry reveals that rats DEX-exposed rats display a lower gastric pH.  $P < 0,001$

## Conclusion

Prenatal exposure to DEX predisposes for peptic ulcer disease in adulthood in this animal model; future studies are needed to assess the clinical relevance of these findings.

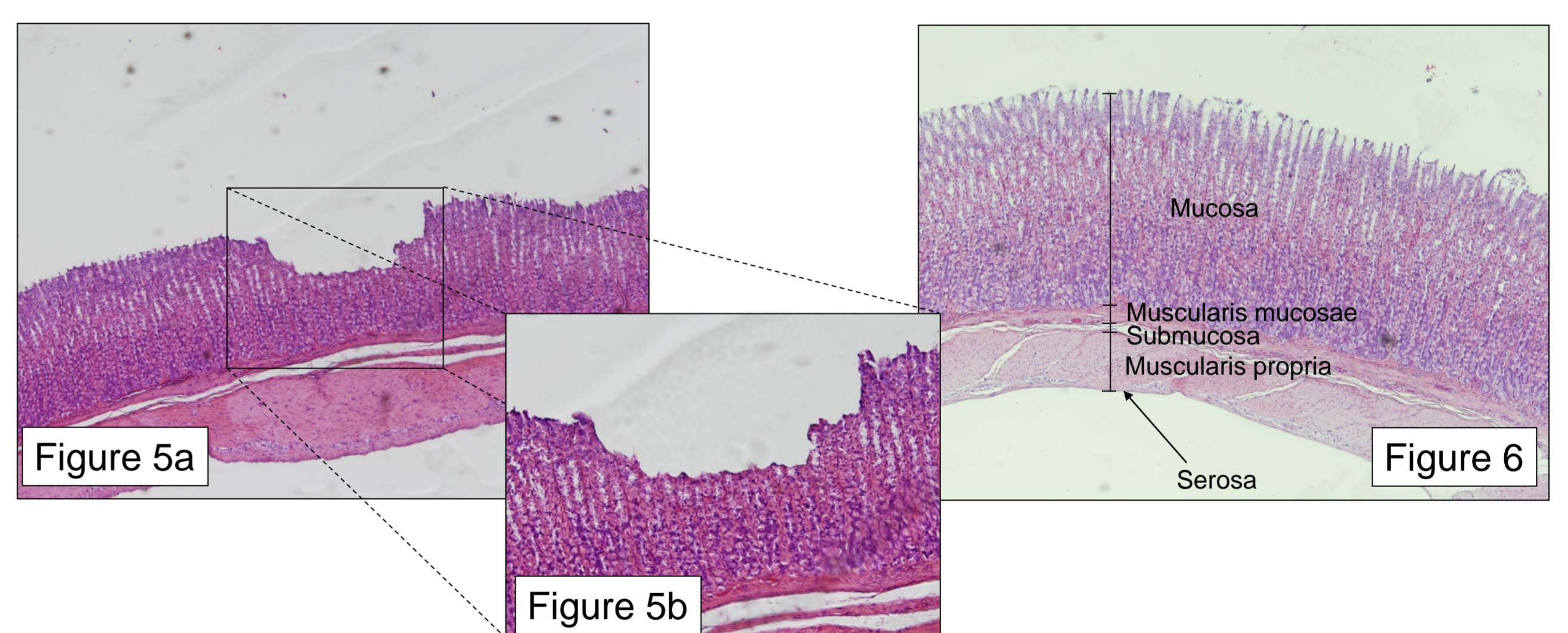
## References

- Olguner M, Akçür FM. 2006 Impact of corticosteroid on intestinal injury in a gastroschisis rat model: morphometric analysis. J Pediatr Surg. 41:1498-1499; author reply 1499.  
 Bittencourt DG, Barreto MW, França WM, Gonçalves A, Pereira LA, Sbragia L. 2006 Impact of corticosteroid on intestinal injury in a gastroschisis rat model: morphometric analysis. J Pediatr Surg. 41:547-553.



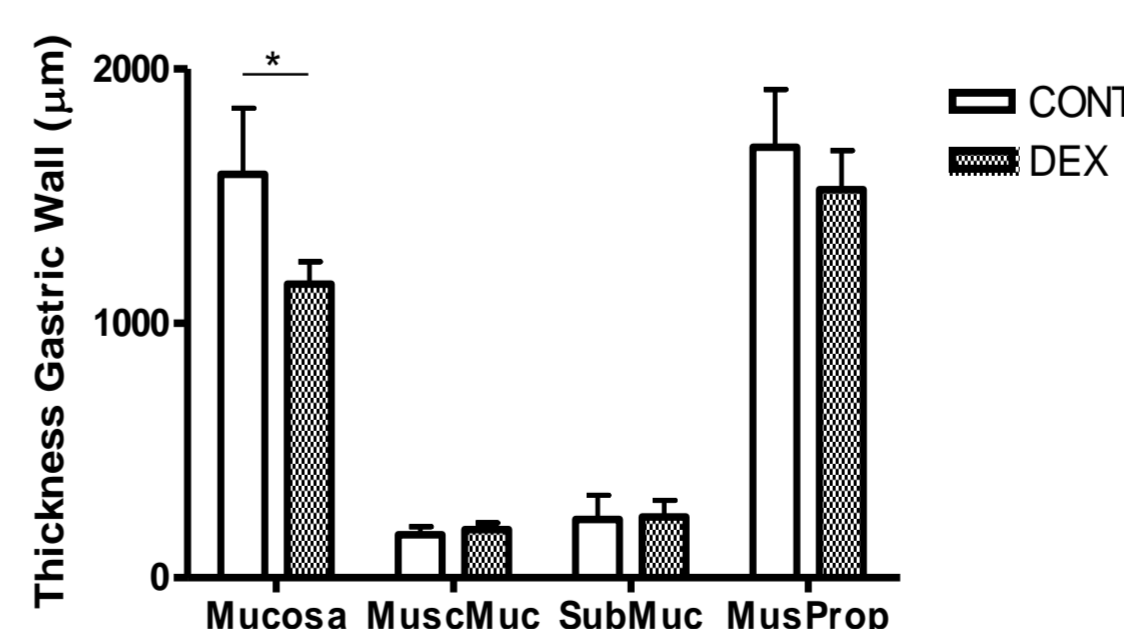
### Macroscopic analysis of gastric mucosa

Image 1 and 2 show macroscopic mucosa lesions (body region) of adult rats that were submitted to antenatal DEX exposure. 70% of DEX-treated rats had mucosa lesions. In controls (Image 3/4) no macroscopic alterations were found in the gastric mucosa.



### Microscopic analysis of gastric mucosa

Photomicrograph illustrating histologic findings. Gastric wall (Fig 5a-b) of DEX treated rats show a lesion of the mucosa without reaching the muscularis mucosae. Fig. 6 represents a gastric wall from a control rat.



### Histological Measures of Gastric Wall

The thickness of the wall of gastric mucosa, muscularis mucosae, submucosa and muscularis propria. Data reveals that DEX-treated animals had atrophy of the mucosa.  $*p < 0,05$ .