CALPROTECTIN AS AN INDICATOR OF INTESTINAL INFLAMMATION IN MICE

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Aim

- To evaluate **if Calprotectin** could be a biomarker of intestinal inflammation in a model mice DSS-induced colitis.
- Set up a technique of identifying ***Helicobacter spp***. by extracting DNA in faecal samples of mice to determine the absence of this pathogen that can interfere with experimental results.

Introduction

Inflammatory bowel diseases (IBD) are characterized by intestinal mucosae inflammation of unknown etiology.

Calprotectin is a calcium- and zinc-binding **protein** predominantly expressed in **neutrophils**. It has antimicrobial properties and appears to play a regulatory role in the inflammatory process.

Faecal calprotectin is a promising **marker** of IBD.

Helicobacter spp is Gram-negative bacterial that cause gastric diseases, which contributes to the development of inflammation. Their presence interferes in the results in different research areas; cancer, immune response, reproduction and chronic inflammation.

This study was considered necessary to detect the presence of *Helicobacter spp.* for the **correct calprotectin validation**.

Material and Methods

Used to...

- ✓ 11 mice female CD1 9 weeks old
- ✓ Housed under conventional conditions
- ✓ Two groups: "**control**" (n=5) and "**DSS**" (n=6)
- ✓ Experiment duration: 5 days
- ✓ Pellet and water *ad libitum*

Every day

- ✓ It gives 5% DSS in water for induce colitis
- ✓ Control body weight and clinical signs: all group
- ✓ Stool sample collect

5 day

- ✓ Mice were sacrificed
- ✓ Length of colon was measured (caeco-colic junction to anus).

Parameter evaluated

- ✓ Concentration Calprotectin (ELISA)
- ✓ Absence *Helicobacter spp* (PCR)

Results and discussion

There are no observable differences between clinical signs, body weight and colon length in "control group" and "DSS treated group" (Fig. 1 and Fig. 2).

Treated mice did not show clinical intestinal inflammation.

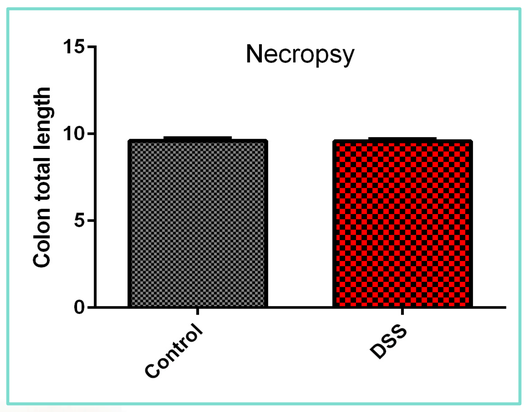

Figure 1: Colon length in control mice and treated mice .

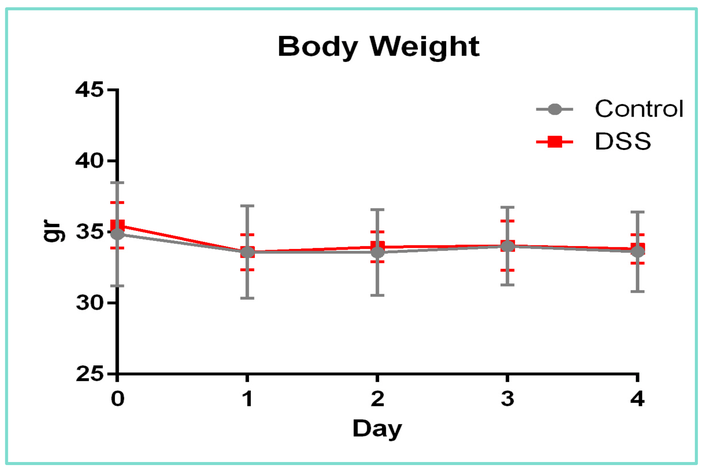

Figure 2: Body weight in mice at different days.

However, there are differences about calprotectin concentration between groups (Fig. 3).

The increase in **Calprotectin** concentration was due to intestinal inflammation demonstrating that calprotectin is a good biomarker. Allows a more accurate monitoring and detect subclinical inflammation.

The "control" and "DSS" animals were **free of *Helicobacter spp*** Therefore calprotectin levels are due to inflammation (Fig. 4).

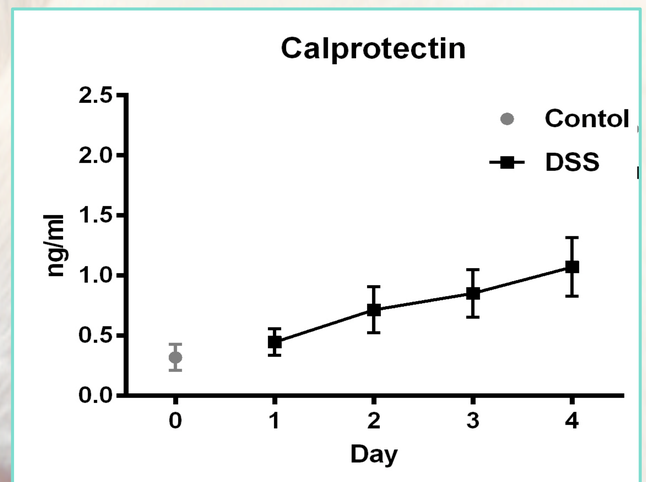

Figure 3: Calprotectin levels in control group (day 0) and treated group.

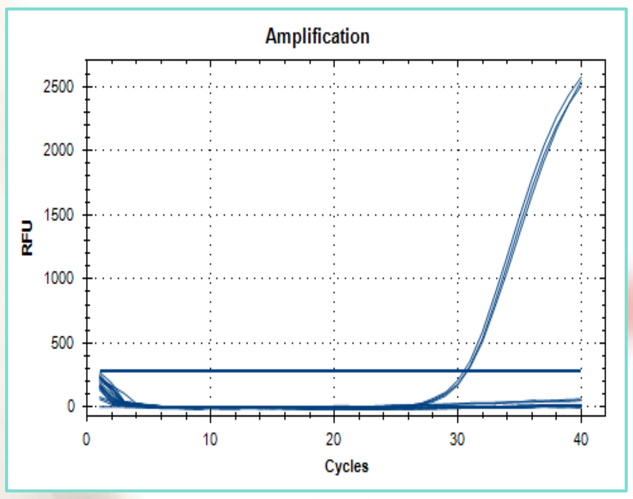

Figure 4: Determination of *Helicobacter spp*. in stool samples; control, positive control and treated.

Conclusion

- DSS treated mice developed subclinical intestinal inflammation **without differences** in clinical signs and body weight with the control group.
- **Calprotectin** was useful as biomarker and was more sensitive than clinical monitoring, allowing to control and quantify more accurately the evolution of intestinal inflammation, especially in the **subclinical** stage.
- Determination of ***Helicobacter spp***. allowed to conclude that mice were **free** of this pathogen, therefore, and prevented variability in our results.