

IN VITRO IMMUNOMODULATORY ACTIVITY OF A MULTI-ACTION LIQUID SOLUTION IN AN INTESTINAL CELL MODEL

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INTRODUCTION

Inflammation is a **critical physiological immune response** that protects the host **against pathogens and harmful stimuli**. However, **excessive or chronic inflammation** can **compromise gut epithelial integrity, impair nutrient absorption, and reduce growth and overall health**. **Immunomodulatory strategies**, such as supplementation with purified **natural extracts** rich in **bioactive compounds**, have been shown to **effectively control inflammation, improve intestinal health, and support animal performance** (Abd El-Hack *et al.*, 2023).

OBJECTIVE

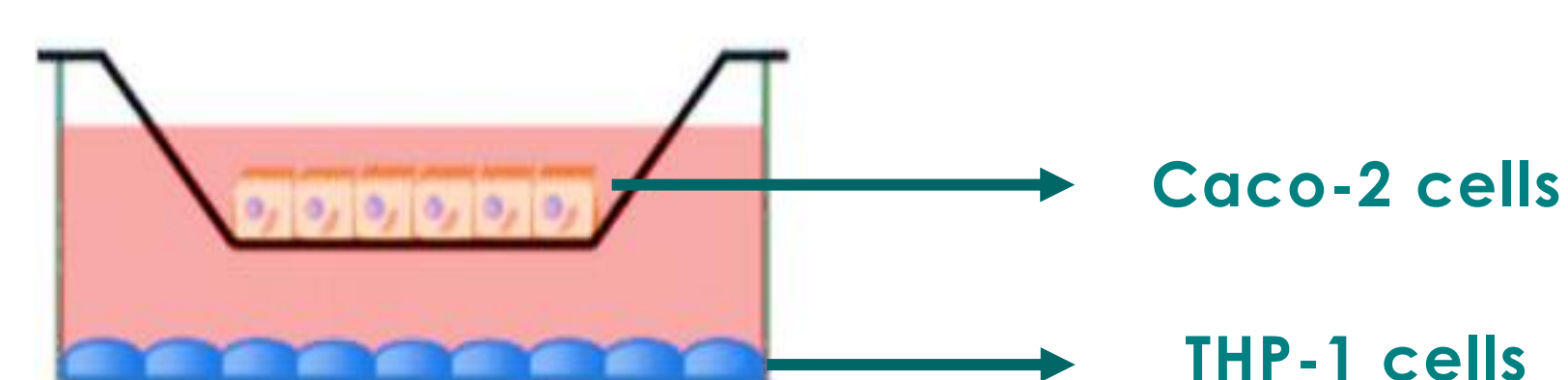
Evaluate the *in vitro* immunostimulatory activity of a liquid solution (LS) based on grape and olive extracts for poultry nutrition. The activity of the product was evaluated in a co-culture model of intestinal cells by measuring pro- and anti-inflammatory cytokine production.

MATERIALS AND METHODS

ANALYTES:

- Pro-inflammatory cytokines: **IL-6** and **TNF-α**
- Anti-inflammatory cytokines: **IL-10**

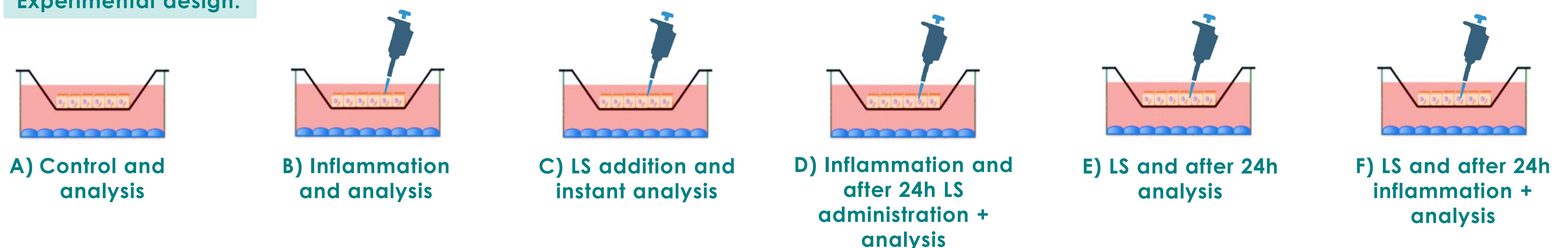
Co-culture model:



Treatments:

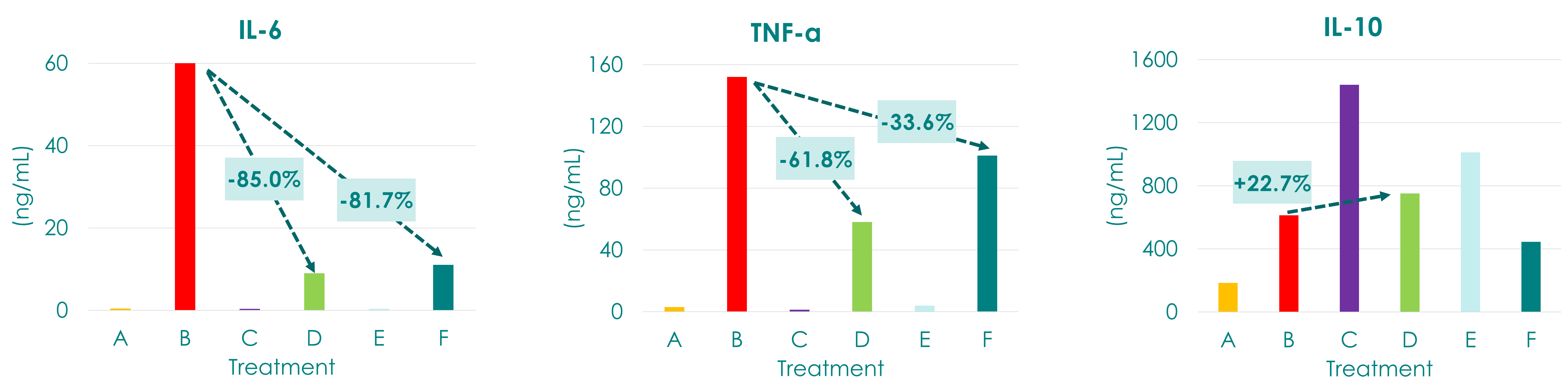
- **Inflammation:** 10⁴ UFC/g *Salmonella* spp. and 10⁴ UFC/g *E. coli*
- **Liquid Solution (LS):** 0.5 g/mL

Experimental design:



* IL-6: Interleukin 6; TNF-α: Tumor Necrosis Factor Alpha; IL-10: Interleukin 10.

RESULTS



The **liquid formulation** based on **grape and olive extracts** significantly **reduced** the levels of the **pro-inflammatory cytokines IL-6 and TNF-α**, while **increasing** the levels of the **anti-inflammatory cytokine IL-10** compared with the inflammatory control. These **effects** were **observed** both in the **treatment of inflammation** and in the **preventive treatment** prior to inflammatory induction.

CONCLUSIONS

The **solution based on natural extracts** has **therapeutic and preventive anti-inflammatory effects, effectively modulating pro- and anti-inflammatory cytokines in gastrointestinal cells** exposed to **pathogenic bacteria**, thereby contributing to **enhance intestinal health and poultry performance**.