

# EFFICACY OF A LIQUID SOLUTION BASED ON GRAPE AND OLIVE EXTRACTS: EVALUATION OF OXIDATIVE STRESS AND ANTIOXIDANT ACTIVITY AGAINST *SALMONELLA SPP.* AND *E. COLI* IN AN *IN VITRO* INTESTINAL MODEL (CACO-2)

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## INTRODUCTION

Maintaining **animal health** and **performance** requires protecting **biological barriers** against environmental and physiological **stressors**. These challenges can trigger excessive production of **free radicals**, leading to damage of essential **cellular structures**. In this context, **natural solutions** based on phytochemicals derived from **plant extracts** have emerged as a promising alternative to support **cellular resilience** and overall health.

In this study, **cellular damage** was induced in an intestinal *in vitro* model using **pathogenic bacteria**, serving as a relevant model of stress-related responses in vital tissues. To counteract these effects, we evaluated a liquid solution based on **grape and olive extracts** with **antioxidant**, **antimicrobial**, and **anti-inflammatory** properties.

## OBJECTIVE

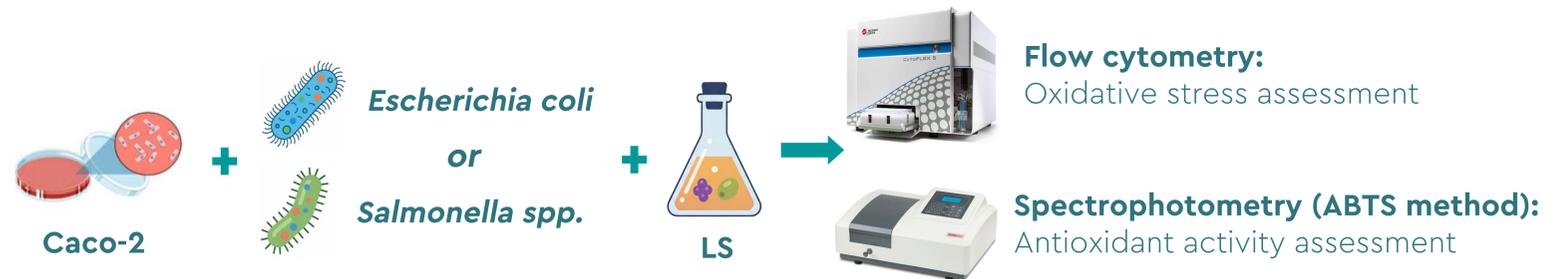
The aim of the present study was to evaluate the **efficacy of a liquid multi-action solution (LS)**, based on **grape and olive extracts**, in **modulating oxidative stress and antioxidant protective activity**, in an **intestinal Caco-2 cell model** exposed to ***Salmonella spp.* and *E. coli***.

## MATERIALS AND METHODS

### EXPERIMENTAL DESIGN

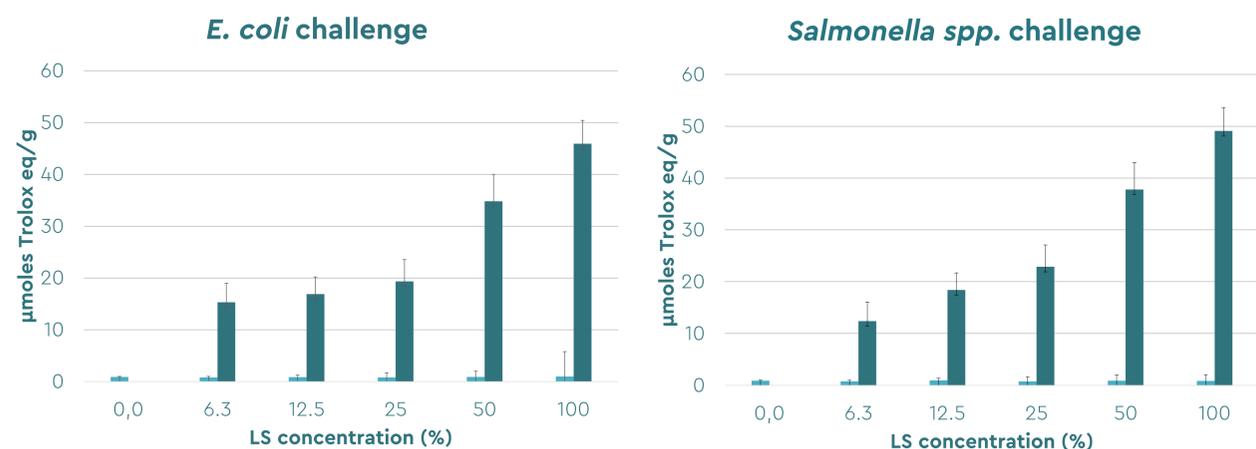
- Incubation conditions: 37°C, 48h
- Inoculum concentration: 10<sup>2</sup> CFU/mL
- LS dose: 0% - 100%

	Pathogen	LS
Negative control (NC)	-	-
Positive control (PC)	+	-
PC + LS	+	+

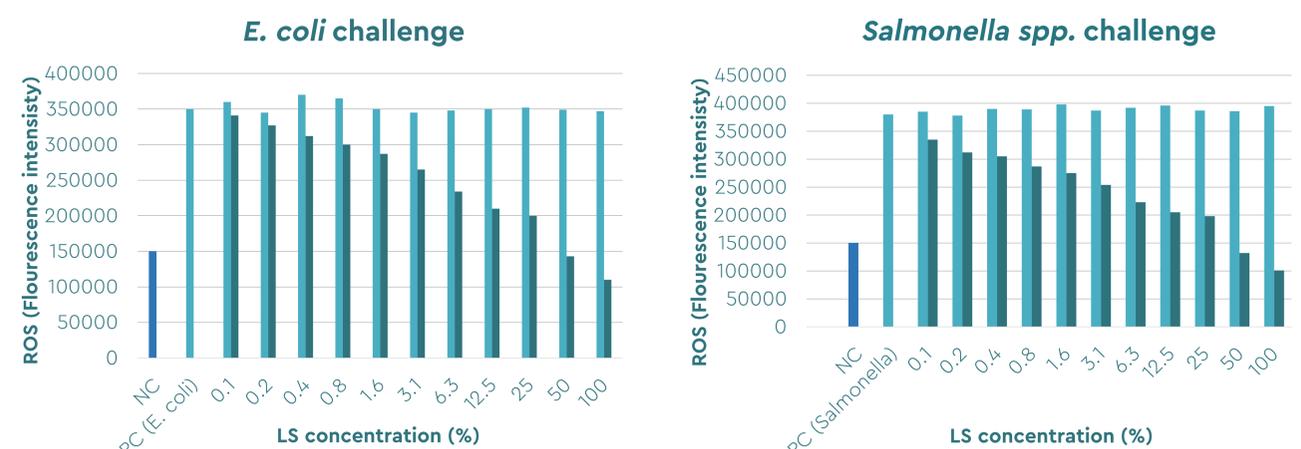


## RESULTS AND DISCUSSION

### ANTIOXIDANT ACTIVITY



### OXIDATIVE STRESS



LS: Liquid Solution ROS: Reactive Oxygen Species

## CONCLUSIONS

The results suggest that the **liquid multi-action solution**, containing phytochemicals from **grape and olive extracts**, exerts a **protective antioxidant effect** on Caco-2 intestinal cells by **modulating oxidative stress and enhancing antioxidant defence activity** when challenged by **pathogenic microorganism**.