MITIGATION OF MYCOTOXIN CONTAMINATION IN BROILERS THROUGH A LIQUID SOLUTION BASED ON PHYTOGENICS: EFFECTS ON PERFORMANCE, AND HEPATIC GENE EXPRESSION

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INTRODUCTION

Mycotoxin contaminated feed disrupts broiler physiology and performance, especially liver function as severely **affects vital organs** and **animal antioxidant status**, requiring the use of **anti-mycotoxin solutions** to **counteract their effects**. Solutions containing **natural extracts** with a **high antioxidant capacity**, are taking a stance as **new nutritional strategies** for the **mitigation of mycotoxin's detrimental effects** in animal nutrition.

OBJECTIVE

The aim of the present study was to evaluate the potential benefits of a liquid solution (LS) containing phytogenics of grape and olive extracts (*Vitis Vinifera and Olea Europaea*), administered via drinking water, on performance and liver gene expression in broiler chickens exposed to a natural multi-contaminated diet by mycotoxins.

MATERIALS AND METHODS

144 one day old broiler chickens (Ross 308) ♂

6 replicates/group

12 broiler chickens/replicate

Non antibiotic administration

Naturally contaminated diets

	Aflatoxins (ppb)	Fumonisins (ppb)	Ochratoxin A (ppb)
Starter diet (1-10 days)	76.2	1602.2	57.8
Grower diet (11-24 days)	83.1	1600.2	54.3
Finisher diet (25-42 days)	79.4	1702.1	54.2

**Mycotoxins were analyzed by Lateral Flow kits.*

G1: Multi-contaminated diet
G2: Multi-contaminated diet + 2L LS/1000L drinking water

PARAMETERS EVALUATED

Productive parameters:

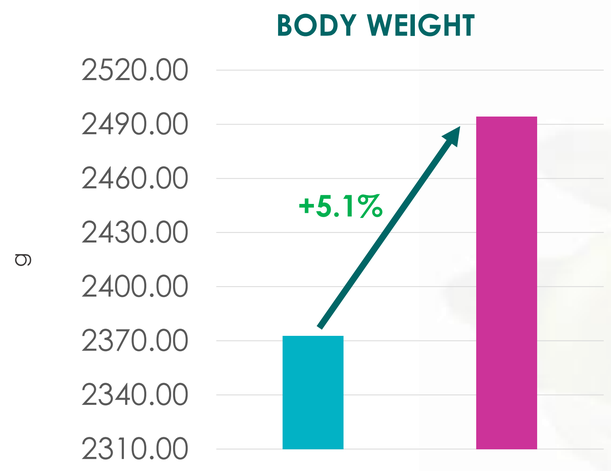
- Body weight
- Average daily gain
- Feed conversion ratio
- Mortality

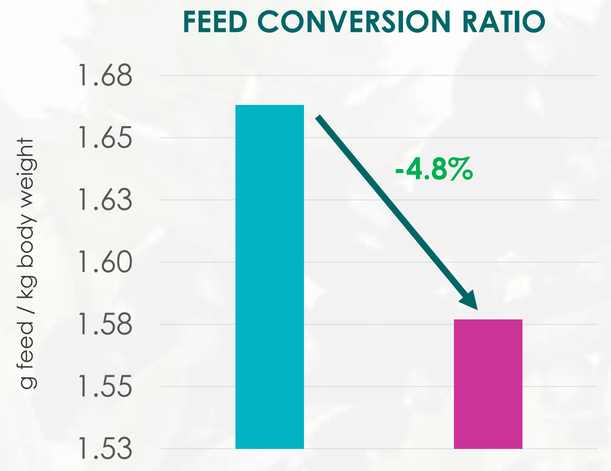
Metagenomic analysis

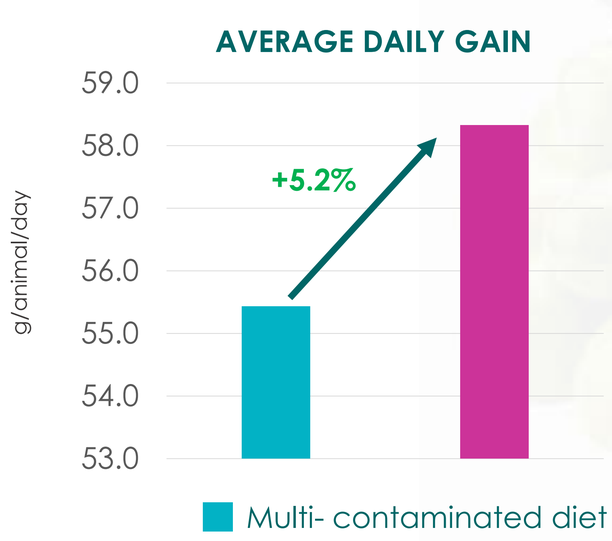
- NRF-2
- EPHX-1

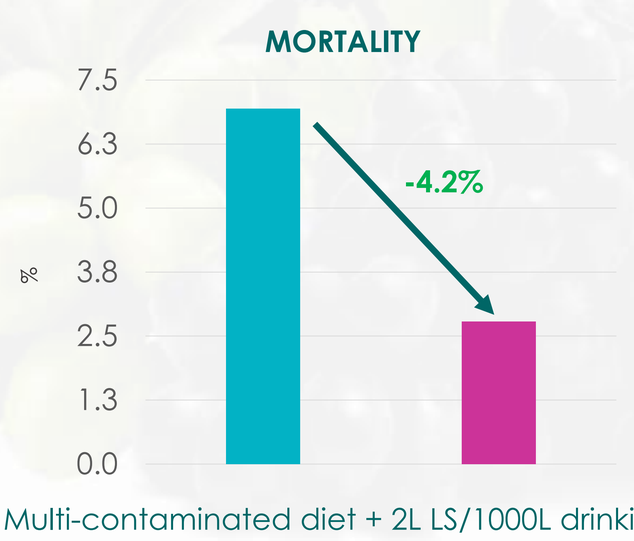
RESULTS

PRODUCTIVE PARAMETERS





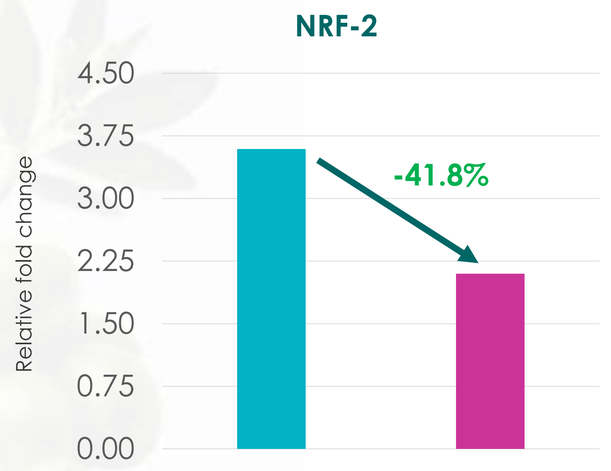


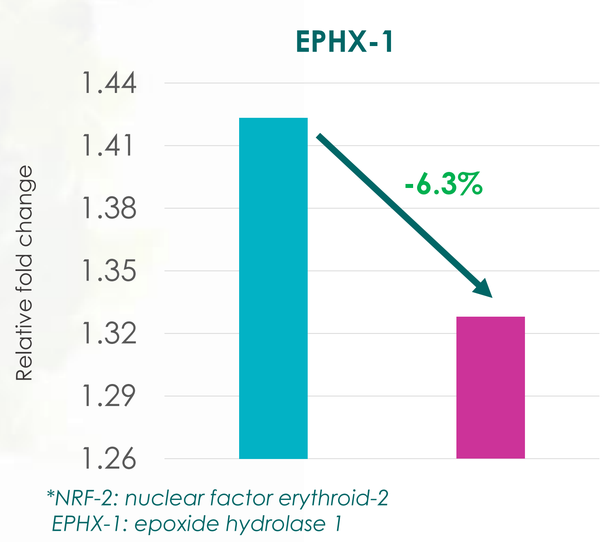


Multi- contaminated diet

Multi-contaminated diet + 2L LS/1000L drinking water

METAGENOMIC ANALYSIS





**NRF-2: nuclear factor erythroid-2*
EPHX-1: epoxide hydrolase 1

CONCLUSIONS

The **liquid anti-mycotoxins solution (LS)** administrated via drinking water **enhances** all the **growth parameters** studied (P<0.05) and **down-regulates** the **liver gene expression** of **NRF-2 and EPXH-1** (P<0.05). It can be concluded that the **liquid anti-mycotoxin solution**, which contains phytogenics from **grape and olive extracts**, significantly **increases the performance** and **regulates** the **hepatic gene expression** of broilers challenged by a **multi-mycotoxin contaminated diet**.