

# THE *IN VITRO* EFFICACY OF A MULTI-ACTION COMPLEX: ANTIOXIDANT ACTIVITY IN HUMAN COLORECTAL CARCINOMA CELLS (CACO-2)

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## 1. INTRODUCTION

Different molecular mechanisms are involved in **mycotoxin-induced toxicity**.

**Oxidative stress** and subsequent free **radical generation** play a pivotal role in human and animal health. Indeed, an alteration in the balance between free radicals and antioxidant defense systems can induce **chemical damage to DNA, proteins and lipids**, as observed after **exposure to mycotoxins** (Assi, 2007).

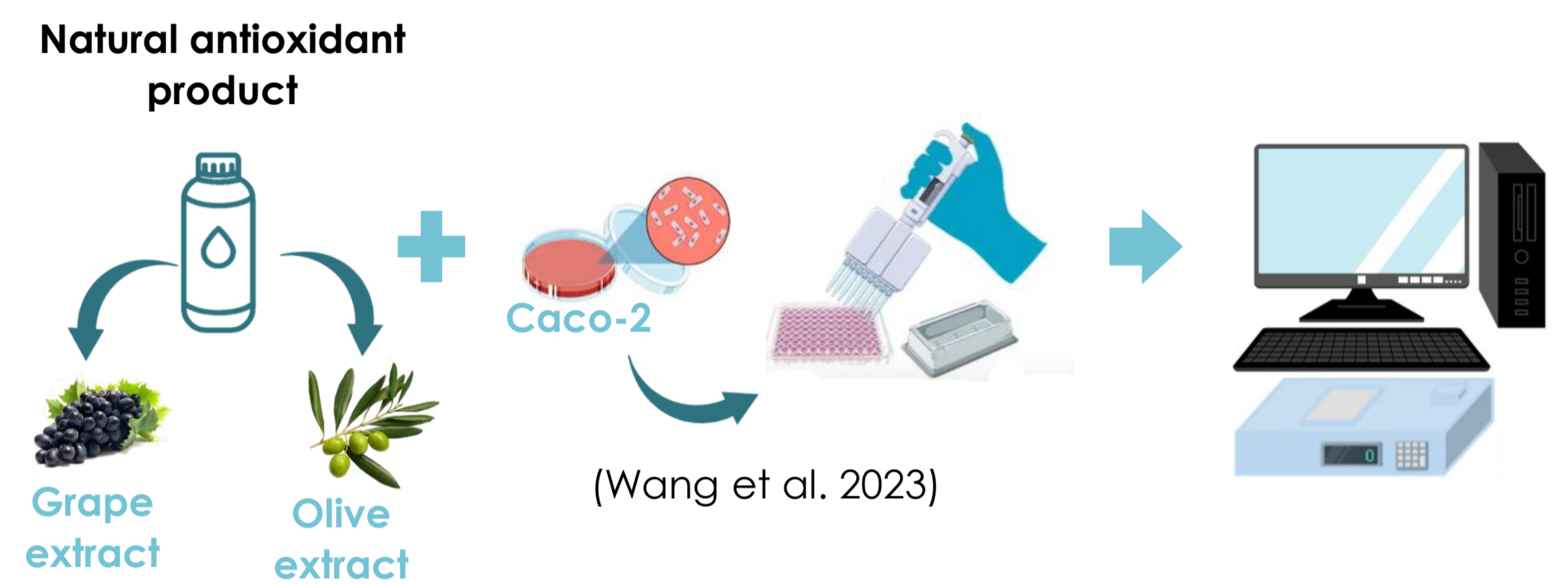
Since exposure to mycotoxins is difficult to avoid, **dietary strategies** have been developed to **mitigate the damage caused by mycotoxins** (Li et al., 2005).

Several studies have demonstrated the effectiveness of compounds with antioxidant activity in alleviating the effects of oxidative stress caused by mycotoxins. In this respect, the inclusion of **natural antioxidants** has shown the ability to **reduce or prevent the secondary effects of mycotoxin** (Wang et al., 2023).

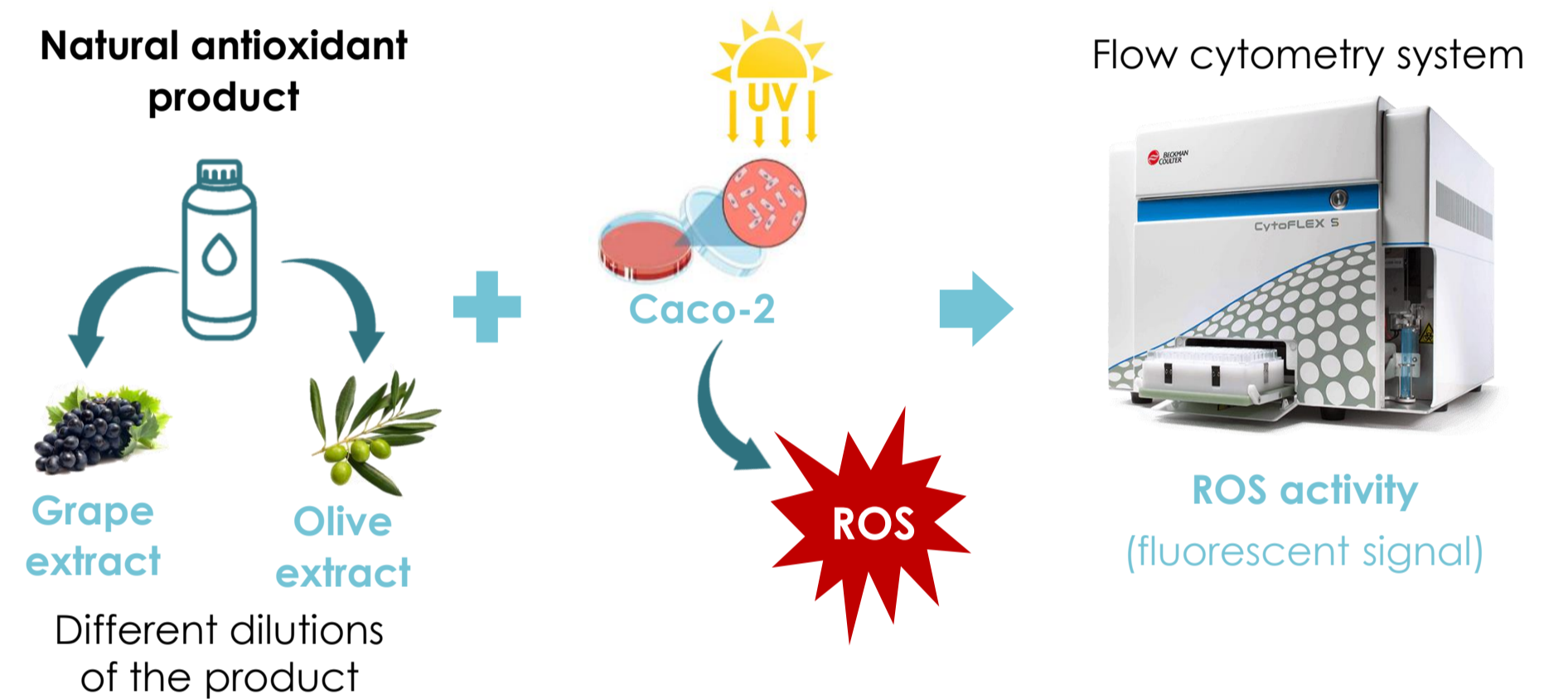
**AIM:** To analyze the *in vitro* **antioxidant capacity** in immortalized human carcinoma cells (Caco-2) of a **product formulated from natural compounds** with a potential to reduce the oxidative stress.

## 2. MATERIALS AND METHODS

### 2.1. Cell viability (MTT assay)

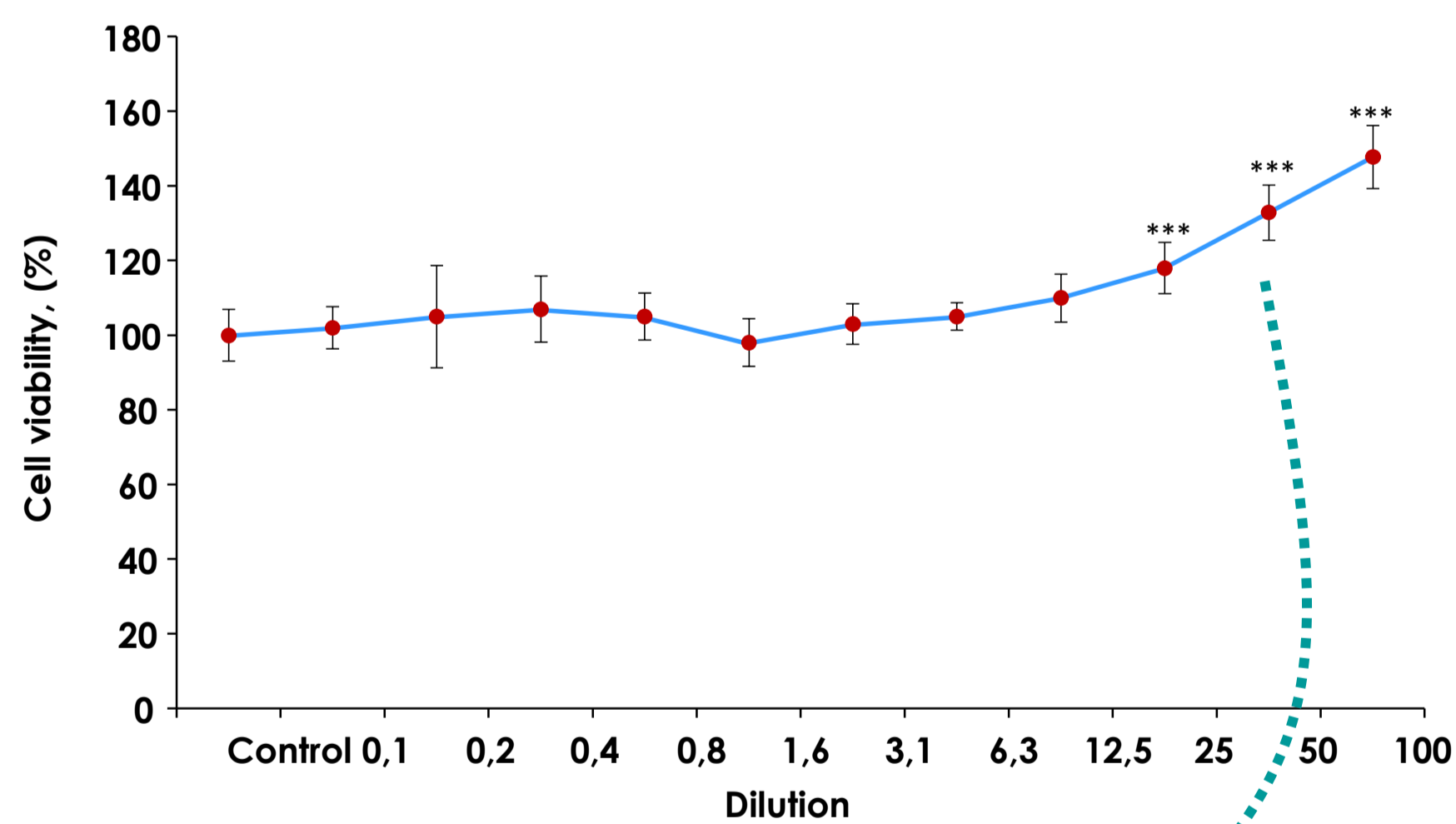


### 2.2. Oxidative stress



## 3. RESULTS

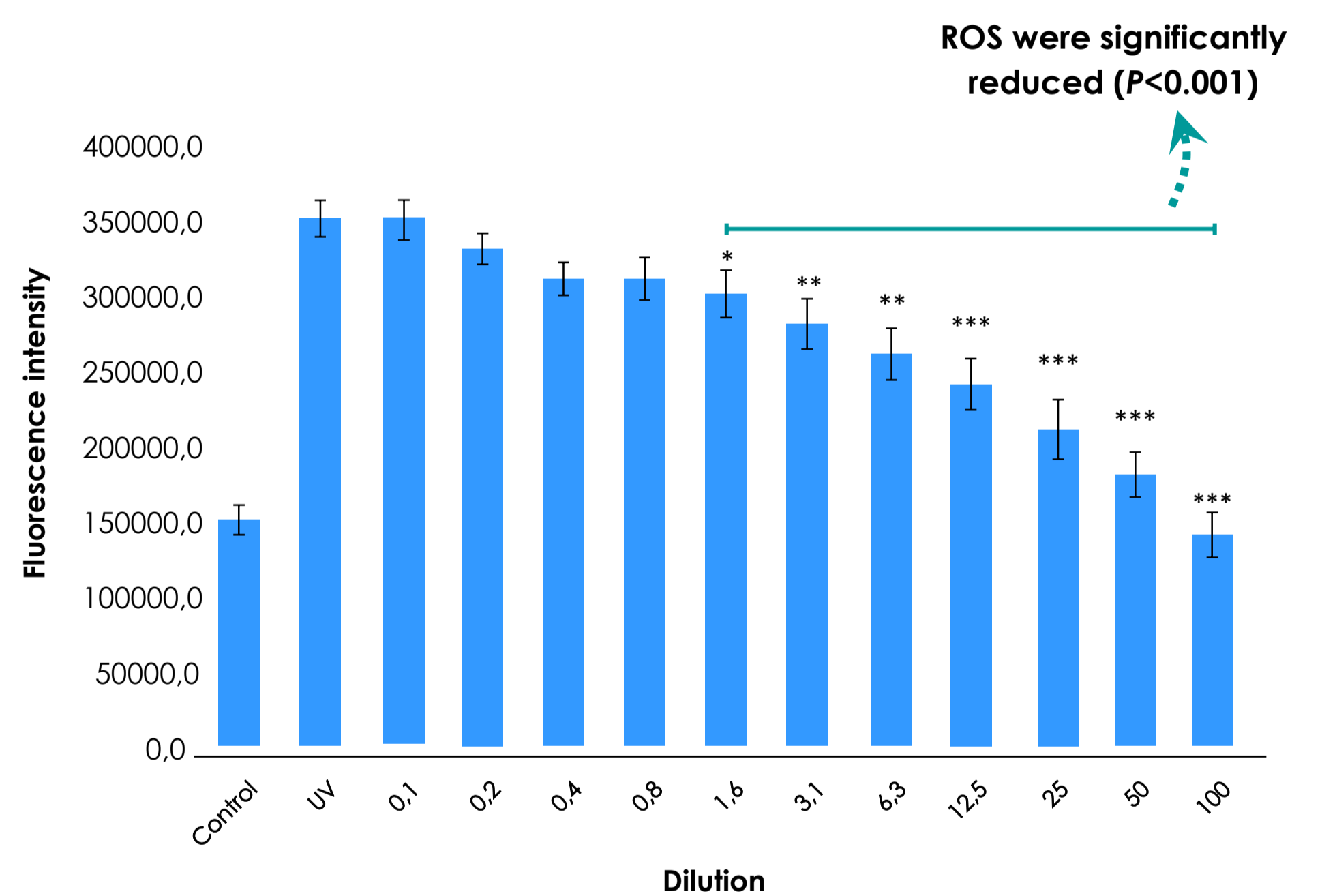
### Cell viability



The product was **not cytotoxic** in the **Caco-2 cell model**.

**Cell viability was significantly prolonged** with statistical significance between **25 and 100%** ( $P < 0.001$ ) of the tested product, which demonstrates a positive capability to stimulate the cells growth GI tract.

### ROS activity



This product demonstrates a **broad spectrum of free radical scavenging activity** that is the basis of apoptosis.

## 4. CONCLUSIONS

The **product** demonstrated **non-cytotoxic effects** and significantly enhanced **cell viability**, indicating **potential growth stimulation in the GI tract**. Moreover, the **multi-action complex** showed a notable **reduction in ROS levels**, highlighting its **broad-spectrum free radical scavenging activity**. These findings highlight the importance of **include natural antioxidants in animal diet** to **mitigate** the harmful effects of **mycotoxin-induced oxidative stress**, and provide a basis for further research and potential applications to target related health problems.