

Bilberry compounds as modulators of gene expression, cytotoxicity, and oxidative stress in mycotoxin-exposed intestinal cells

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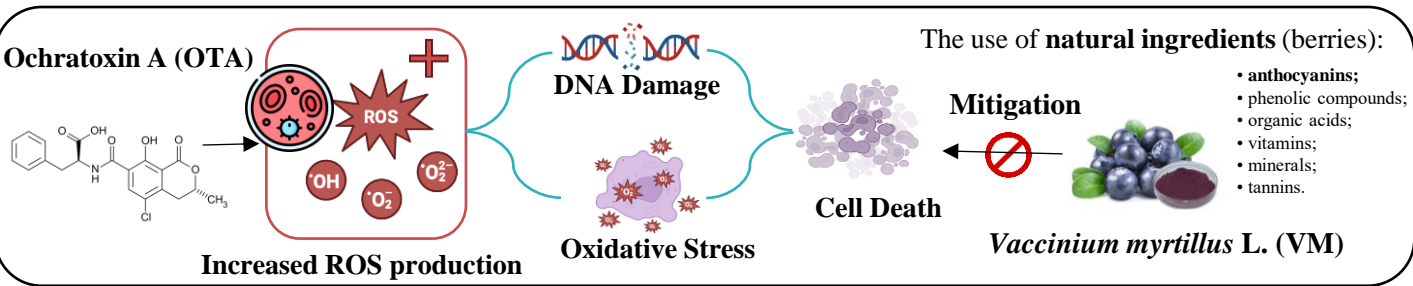
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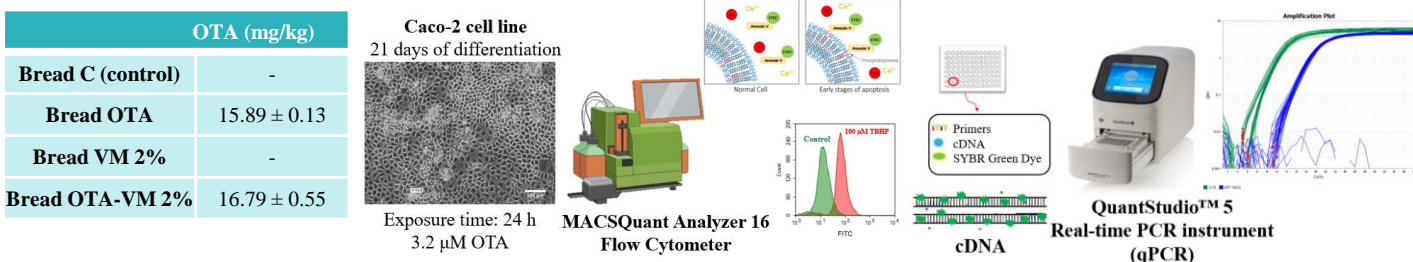


INTRODUCTION



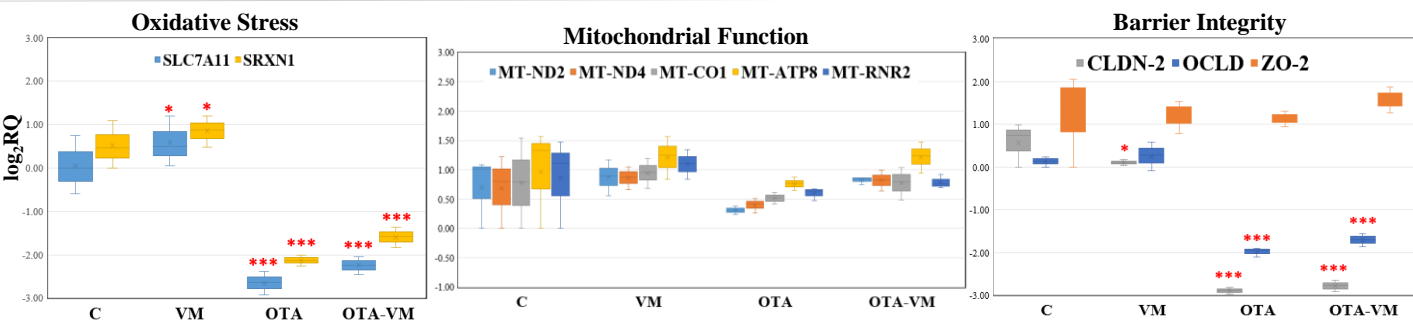
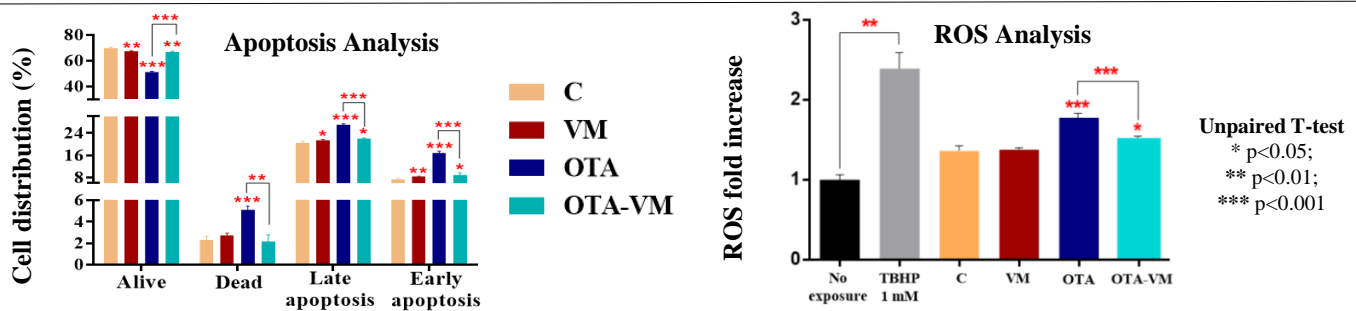
This study aimed to evaluate the effects of bilberries in reducing the cytotoxicity of OTA and their potential to modulate mitochondrial gene expression in intestinal cells.

MATERIAL AND METHODS



- SLC7A11:**
 - Solute carrier family 7 member 11
 - Cystine/glutamate antiporter
 - Oxidative stress protection
- SRXN1:**
 - Sulfiredoxin 1
 - Oxidative stress response
 - Antioxidant activity
- MT-ND2:**
 - NADH dehydrogenase 2
 - Mitochondrial Complex I
 - Oxidative phosphorylation
- MT-ND4:**
 - NADH dehydrogenase 4
 - Complex I subunit
 - Electron transport chain
- MT-CO1:**
 - Cytochrome c oxidase
 - Oxygen reduction
 - Mitochondrial respiration
- MT-ATP8:**
 - ATP synthase membrane subunit 8
 - Mitochondrial energy production
- MT-RNR2:**
 - Mitochondrially encoded 16S RNA
 - Protein synthesis
- CLDN-2:**
 - Claudin-2
 - Ion channel formation
 - Sodium permeability
- OCLD:**
 - Occludin
 - Tight junction sealing
 - Paracellular transport regulation
- ZO-2:**
 - Zonula occludens-2
 - Barrier integrity
 - Regulation of tight junctions

RESULTS AND DISCUSSION



CONCLUSIONS

- Bilberry compounds reduce OTA-induced cytotoxicity and oxidative stress, partially restoring mitochondrial and barrier-related gene expression.
- The reduction in ROS levels and cell death, along with the upregulation of protective gene pathways, underscores the potential of bilberries as functional food ingredients to mitigate mycotoxin toxicity.



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