

Eat healthy and fight against detrimental effects of mycotoxins

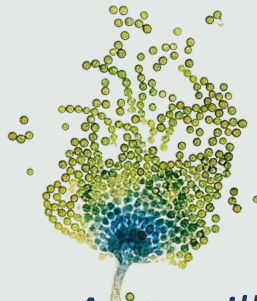
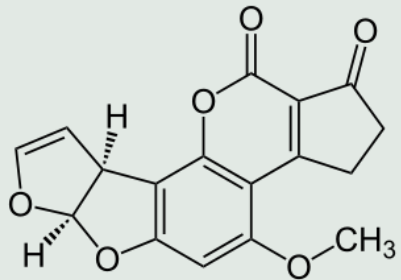
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Introduction

Aflatoxin B1 (AFB1)



Aspergillus parasiticus

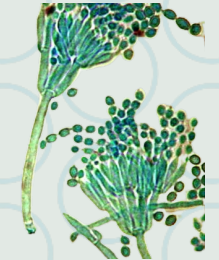
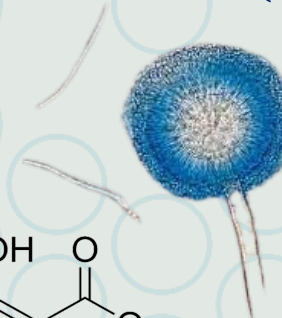
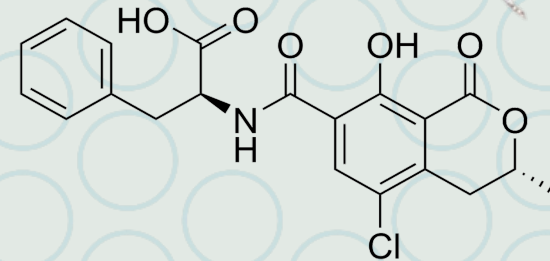


Aspergillus flavus

IARC – Group 1:
Carcinogenic to
humans

Genotoxic
Teratogenic
Hepatotoxic
Immunotoxic

Ochratoxin A (OTA)

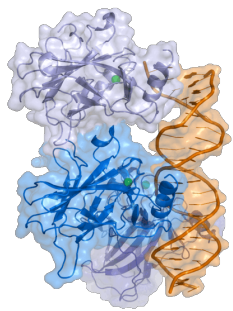


Aspergillus ochraceus

IARC – Group 2B:
Possibly Carcinogenic
to humans

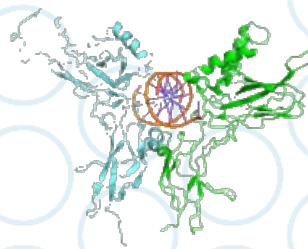
Nephrotoxic
Teratogenic
Hepatotoxic
Immunotoxic

The aim of this work is the evaluation of the protective potential of fermented whey in the duodenum of exposed rats to AFB1 and OTA contaminated feed, individually and combined.

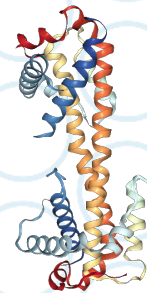


p53

Proapoptotic

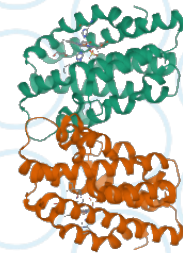


NF-κB



Bax

Oxidative damage



Hmox1



+



120 rats

5 males
5 females
per group

28 days
exposure to
contaminated
diet

Whey



Fermented whey (FW)

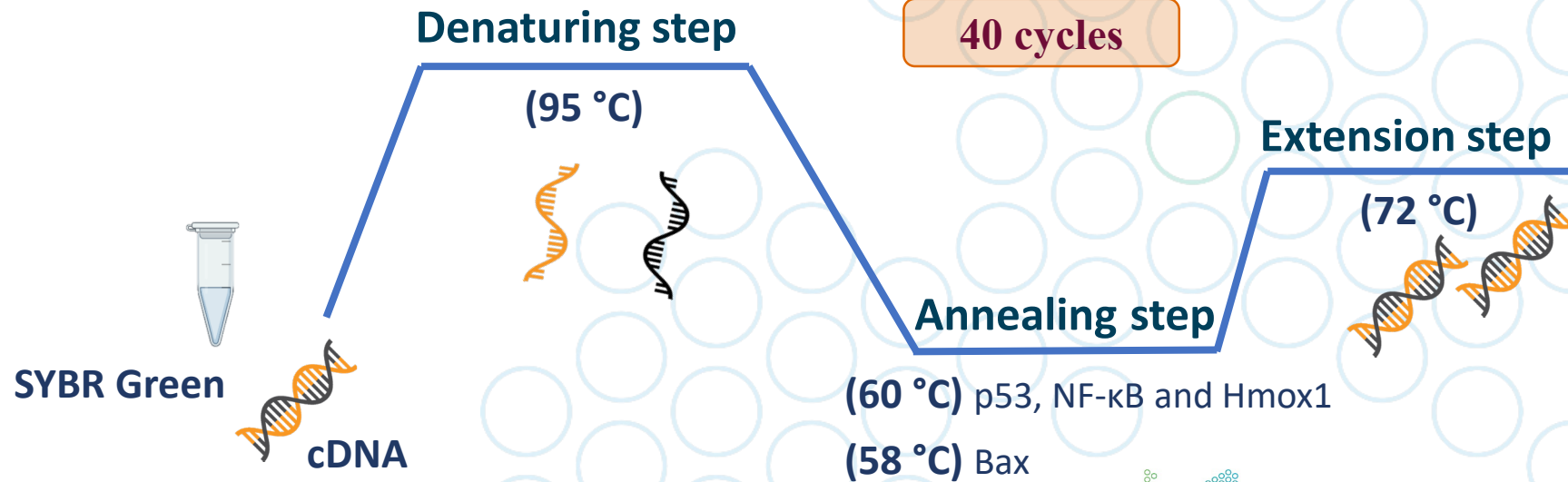
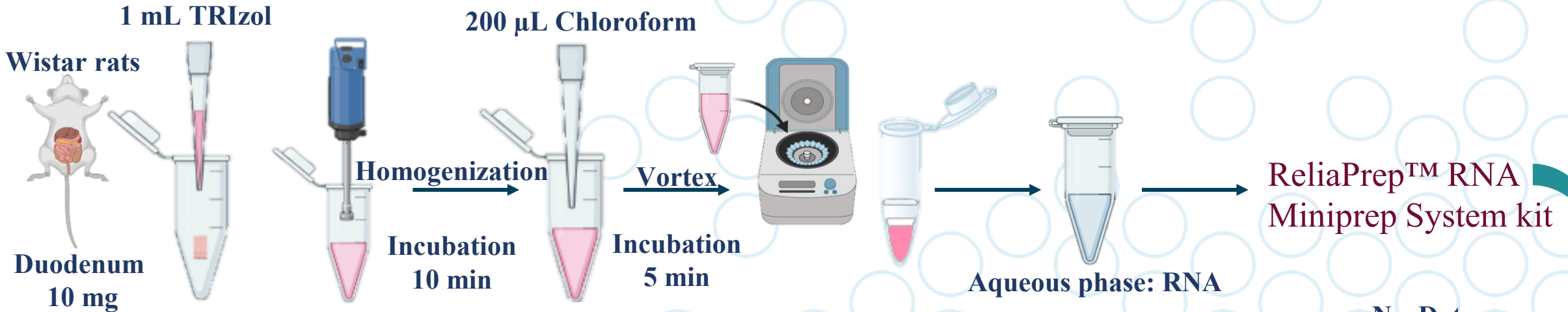
Antifungal
Antimicrobial
Antioxidant
Immunomodulator

*Lactobacillus
plantarum*



| Feed | AFB1 (mg/kg) | OTA (mg/kg) |
|--------------------|--------------|--------------|
| Control | ND | ND |
| AFB1 | 4.92±0.29 | ND |
| OTA | ND | 6.03±0.39 |
| AFB1+OTA | 4.84±0.46 | 6.43±0.68 |
| FW (1%) | ND | ND |
| FW (1%)+AFB1 | 4.31±0.16 | 0.11±0.01 |
| FW (1%)+OTA | 0.15±0.0004 | 8.27±0.07 |
| FW (1%)+AFB1+OTA | 4.54±0.06 | 7.52±0.16 |
| FW (1%)+P | 0.03±0.002 | 0.06±0.00016 |
| FW (1%)+P+AFB1 | 4.66±0.2 | 0.11±0.0011 |
| FW (1%)+P+OTA | ND | 5.44±0.01 |
| FW (1%)+P+AFB1+OTA | 5.24±0.89 | 8.83±0.39 |

Material and methods

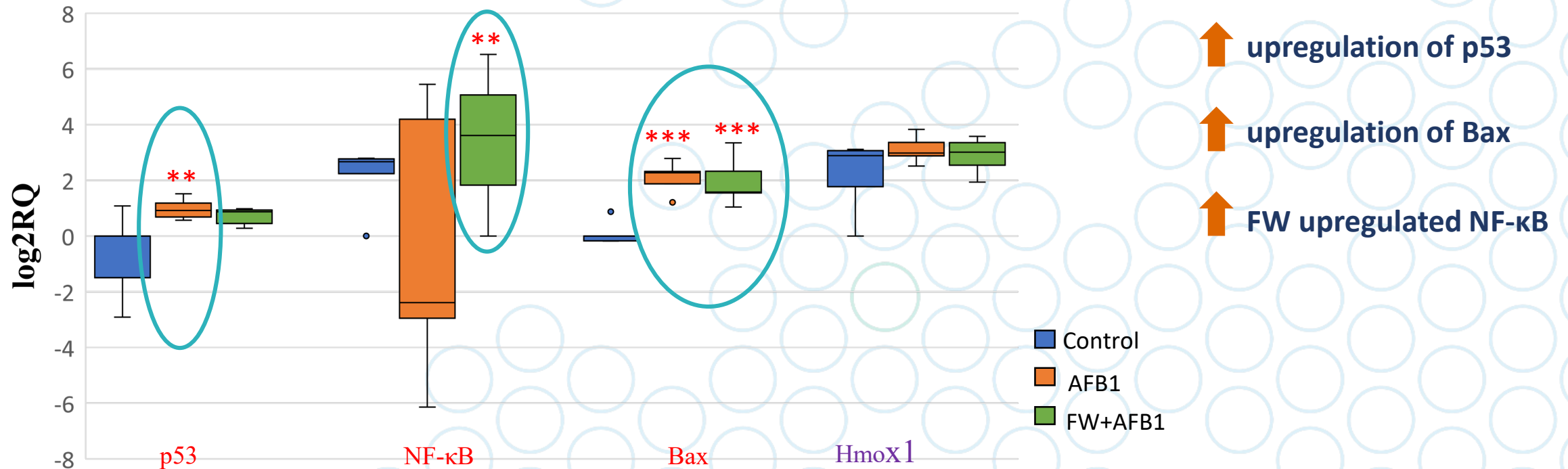


Quantity and quality of RNA

Results

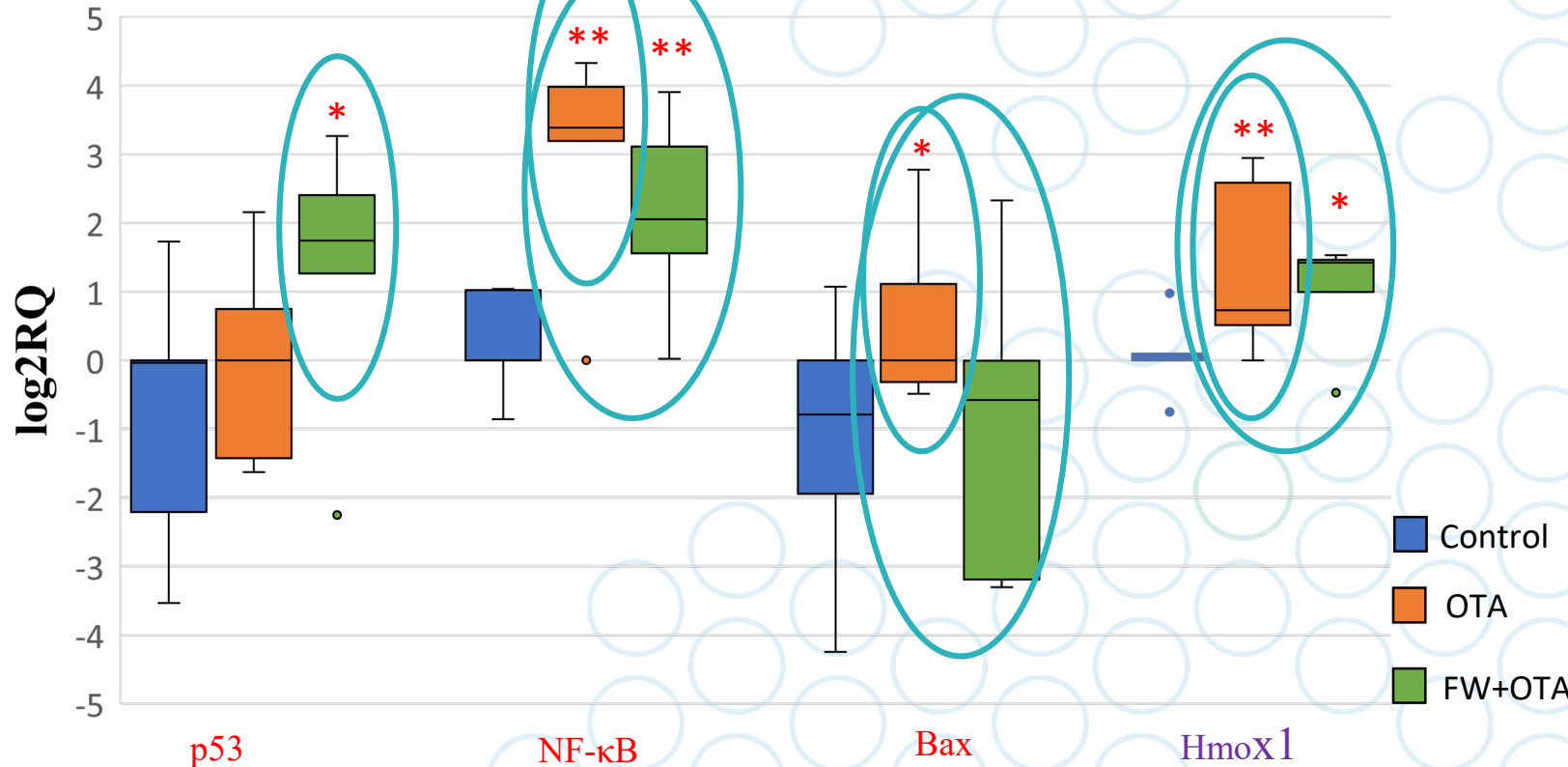
Differential gene expression of apoptosis key genes resulting from exposure to AFB1 and FW

Box plot for AFB1 exposed groups results



Differential gene expression of apoptosis key genes resulting from exposure to OTA and FW

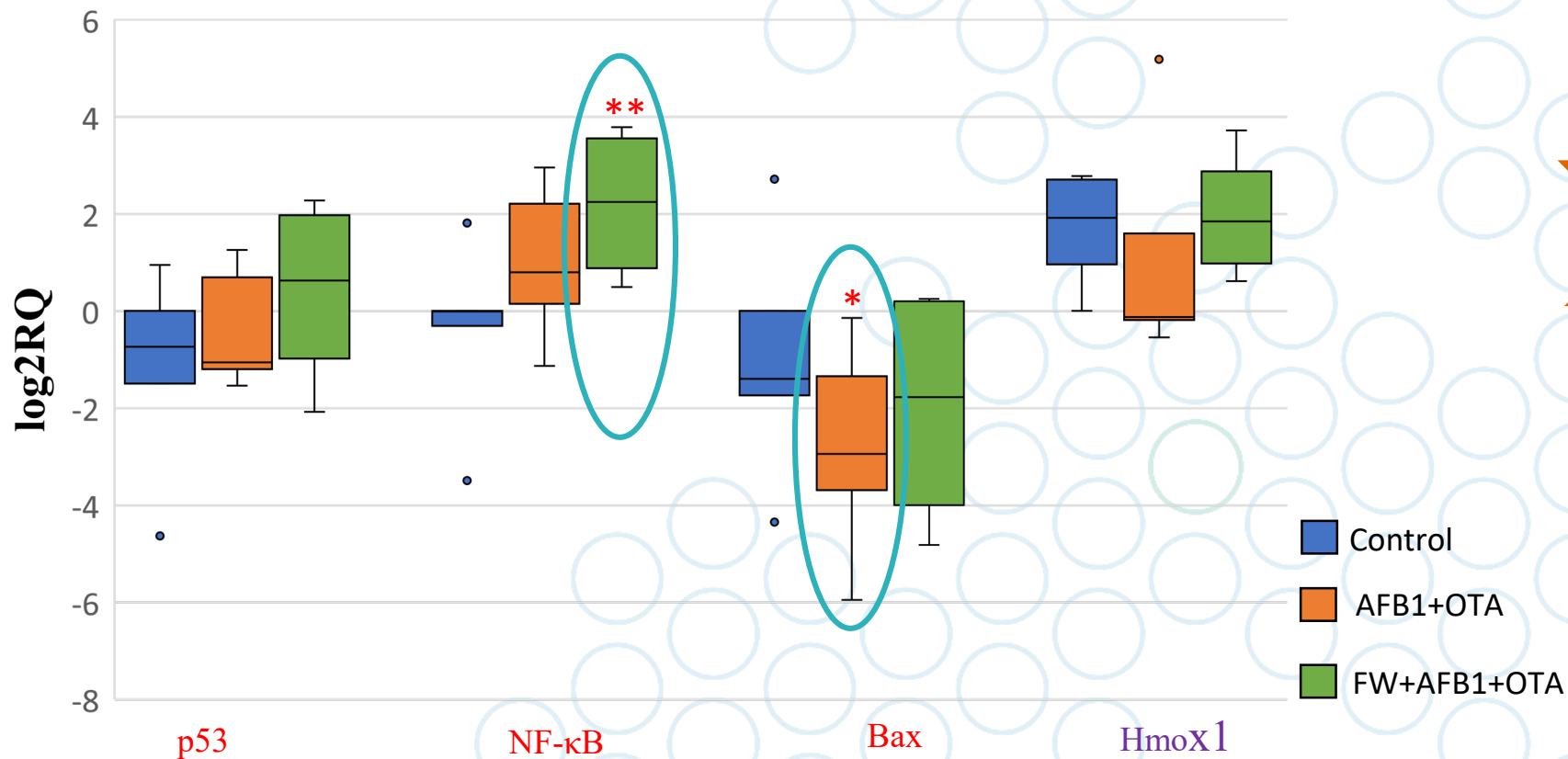
Box plot for OTA exposed groups results.



- ↑ upregulation of Bax
- ↑ FW upregulated p53
- ↑ upregulation of NF-κB
- ↑ upregulation of HmoX1
- ↓ FW modulated the expression of NF-κB, Bax and HmoX1

Differential gene expression of apoptosis key genes resulting from exposure to AFB1+OTA and FW

Box plot for AFB1+OTA exposed groups results



↓ downregulation of Bax

↑ FW upregulated NF-κB

Conclusions

The addition of FW to feed resulted in an efficient strategy to reduce mycotoxin damage in duodenum and the possibilities of uncontrolled cell proliferation.



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Thank you!

Do you want to know
more about mycotoxins?



These results are part of the project PID2022-140722OB-I00, funded by

MCIU/AEI/10.13039/501100011033/FEDER, EU.



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