

# THE ORAL BIOAVAILABILITY OF FUMONISIN B1 IS REDUCED BY AN ANTI-MYCOTOXINS AGENT IN BROILER CHICKENS IN A TOXICOKINETIC STUDY

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## INTRODUCTION

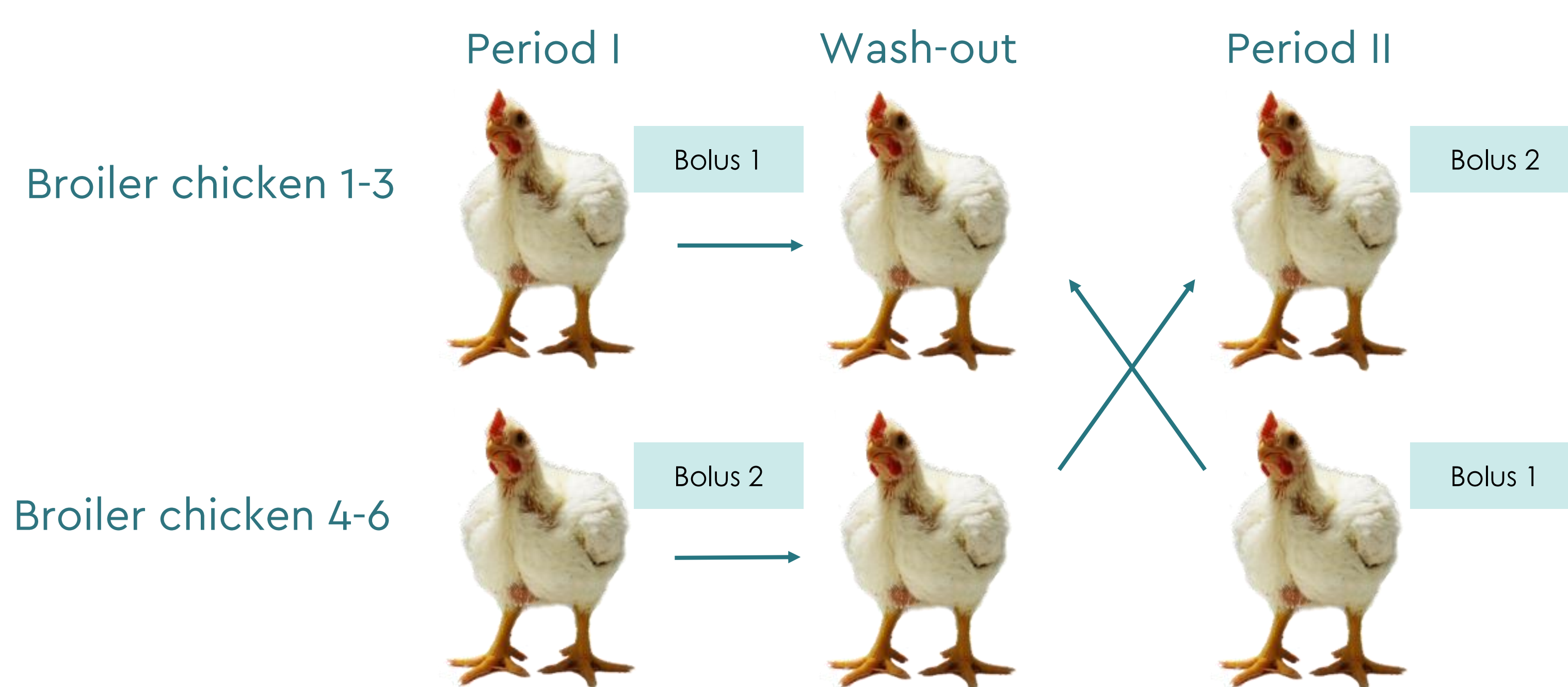
Toxicokinetic studies are necessary to evaluate the efficacy of mycotoxin detoxifiers, considering the possible effects on the oral absorption and disposition of the mycotoxins in broiler chickens. The detoxification capacity of mycotoxins binder for fumonisin B1 (FB1) is rather limited.

## OBJECTIVE

The aim of the present study was to determine the effects of an anti-mycotoxins agent based on minerals, phytochemicals and organic components on the plasma concentration-time profile of FB1 in broiler chickens.

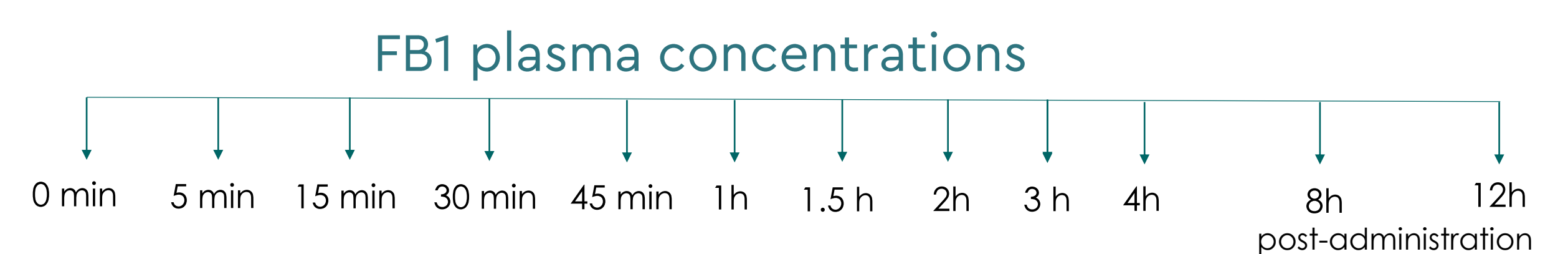
## MATERIALS AND METHODS

### Cross-over design



6 21-day-old-broilers Ross 308

	Bolus 1	Bolus 2
Fumonisin B1	2.5 mg/kg BW	2.5 mg/kg BW
Anti-mycotoxins agent	0 mg/kg BW	3 mg/kg BW



### Calculation of the exposure of the broilers to the fumonisin B1:

Area under the curve from time 0 to 12 h ( $AUC_{0 \rightarrow 12}$ )

Maximum plasma concentration ( $C_{max}$ )

Time at maximal plasma concentration ( $T_{max}$ )

Elimination half-time ( $T_{1/2el}$ )

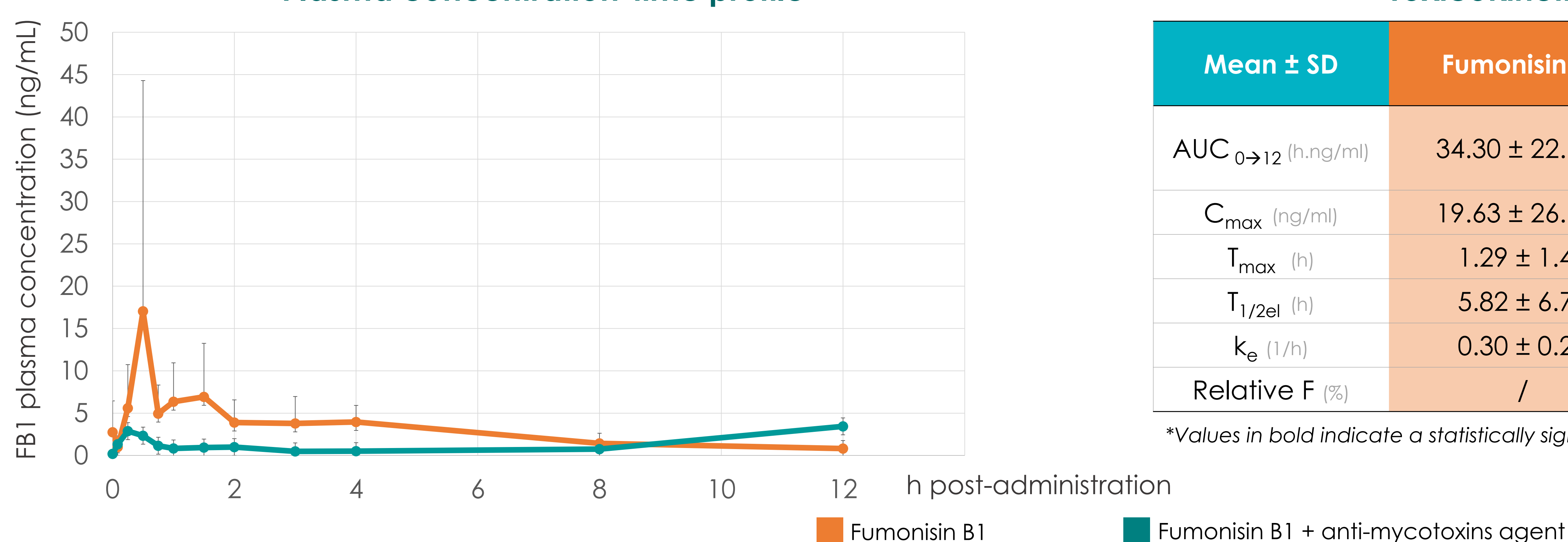
Elimination rate constant ( $k_e$ )

Relative oral bioavailability

$((AUC_{0 \rightarrow 12} \text{ fumonisin B1} + \text{anti-mycotoxin agent} / AUC_{0 \rightarrow 12} \text{ fumonisin B1}) * 100)$

## RESULTS

### Plasma concentration-time profile



### Toxicokinetic parameters

Mean ± SD	Fumonisin B1	Fumonisin B1 + anti-mycotoxins agent
$AUC_{0 \rightarrow 12}$ (h.ng/ml)	34.30 ± 22.760	<b>6.167 ± 4.881</b>
$C_{max}$ (ng/ml)	19.63 ± 26.103	5.09 ± 2.937
$T_{max}$ (h)	1.29 ± 1.40	2.63 ± 4.64
$T_{1/2el}$ (h)	5.82 ± 6.75	3.67 ± 2.59
$k_e$ (1/h)	0.30 ± 0.22	0.43 ± 0.50
Relative F (%)	/	17.98

\*Values in bold indicate a statistically significant difference ( $p < 0.05$ ).

## CONCLUSIONS

The anti-mycotoxins agent containing minerals, phytochemicals and organic components reduced the oral absorption of fumonisin B1, being efficient in reducing the total systemic exposure to fumonisin B1 in broiler chickens.