

## Anti-inflammatory effect of Butirex C4 in an in vitro model

FRANCE, 2021

### SUMMARY

The objective of this project was evaluating the anti-inflammatory effect of Butirex C4 in an in vitro model.

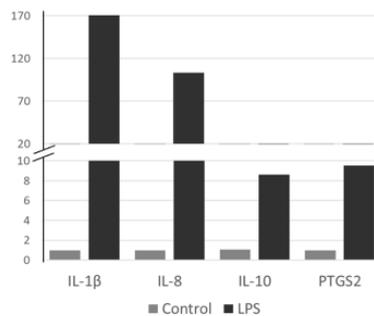


### HOW HAS IT BEEN DONE?

- 2 types of cell cultures: HD11 macrophage (poultry) & pig intestinal cell (IPEC-J2)
- Pre-incubation with the product and then challenge LPS
- Effect on pro-inflammatory cytokines

LPS pro-inflammatory signaling in these models:

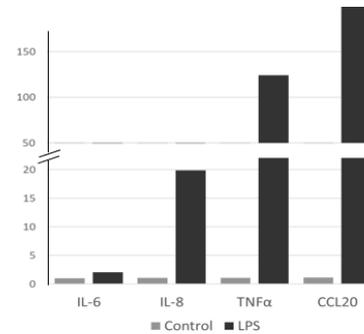
HD11 macrophage (poultry)



		HD-11 Model/control			
		IL-1 $\beta$	IL-8	IL-10	PTGS2
LPS	10 ng/mL				

Target genes: IL-1 $\beta$ , IL-8, IL-10, PTGS2

Pig intestinal cell (IPEC-J2)



		IPEC-J2 Model/control			
		IL-6	IL-8	TNF $\alpha$	CCL20
LPS	10 ng/mL				

Target genes: TNF- $\alpha$ , IL-6, CCL20 and IL-8

**Did you know...?** Lipopolysaccharide (LPS) is a major component of the outer membrane of Gram-negative bacteria, with a pro-inflammatory action, and then, it gives a strong increase of cytokines

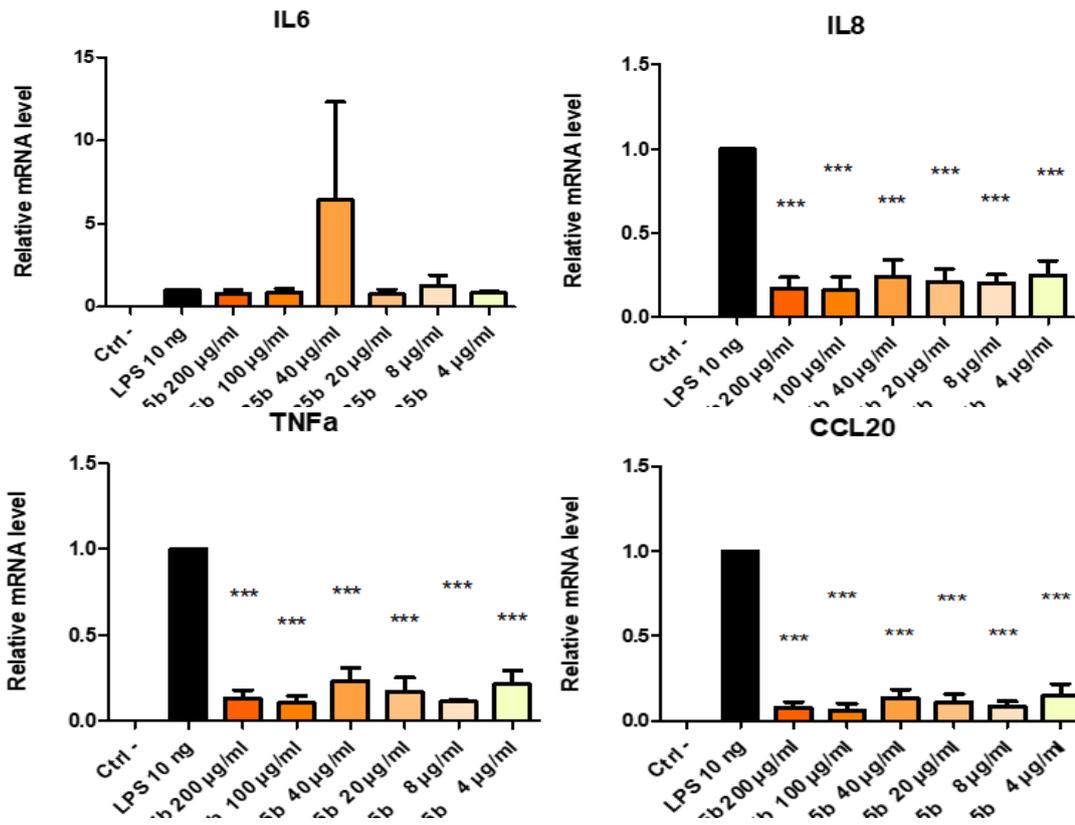
Over-expression



Under-expression

RESULTS

Effect on pro-inflammatory cytokines:



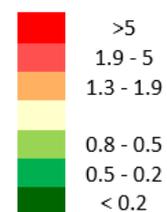
Level of expression in comparison to the LPS condition:

		HD-11 Model /LPS				IPEC-J2 Model/ LPS			
		IL-1β	IL-8	IL-10	PTGS2	IL-6	IL-8	TNFα	CCL20
Butyric acid	4 µg/ml	0.8-0.5	0.8-0.5	0.8-0.5	0.8-0.5	0.8-0.5	0.5-0.2	0.5-0.2	0.5-0.2
	8 µg/ml	0.8-0.5	0.8-0.5	0.8-0.5	0.8-0.5	0.8-0.5	0.5-0.2	0.5-0.2	0.5-0.2
	20 µg/ml	1.9-5	1.9-5	0.8-0.5	1.3-1.9	0.8-0.5	0.5-0.2	0.5-0.2	0.5-0.2
	40 µg/ml	>5	1.9-5	0.8-0.5	1.3-1.9	>5	0.5-0.2	0.5-0.2	0.5-0.2
	100 µg/ml	1.9-5	1.9-5	0.8-0.5	0.8-0.5	0.8-0.5	0.5-0.2	0.5-0.2	0.5-0.2
	200 µg/ml	1.9-5	1.9-5	0.8-0.5	0.8-0.5	0.8-0.5	0.5-0.2	0.5-0.2	0.5-0.2

CONCLUSION

- Interesting anti-inflammatory effect of butyric acid at all tested doses on most selected pro-inflammatory cytokines in pig intestinal cell (IPEC-J2).
- Butirex C4 have the ability to protect against inflammation.

Over-expression



Under-expression