

Evaluation of the antibacterial and anti-inflammatory effects of Thymus Capitatus against subclinical mastitis

CONTEXTE

Subclinical mastitis (SM) is a major economic problem for farmers. It's usually treated with antibiotics that represent a major environmental problem:

- Decrease the milk production;
- Impact on cows fertility;
- Increase the antibiotic resistance.

STRATEGIE

Essential oils (EO) could be a good strategy to treat subclinical mastitis :

- *Ex vivo* study: Study the anti-inflammatory effects of TC + its major components C (Carvacrol) and T (γ Terpinene) on cow's PBMC
- *In vivo* study: Application of Thymus Capitatus EO (TCEO) on affected quarters of cows with SM;
- Study the evolution of SM + milk properties

RESULTATS In vivo study

hydrodynamic diameters of milk's casein micelles

Bacteriological analysis

No significant difference (P=5%)

IL8 in Milk

Milk nutritional properties

Somatic cell count

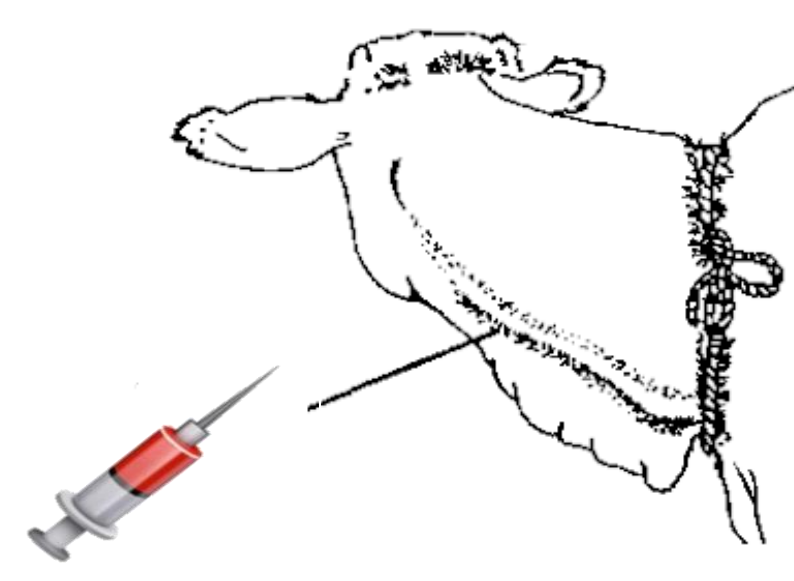
CONCLUSION +

The anti-inflammatory and anti-bacterial effects of TCEO highlighted in the *In vitro* and *ex vivo* studies were not followed by the same effects in the *in vivo* study against mastitis

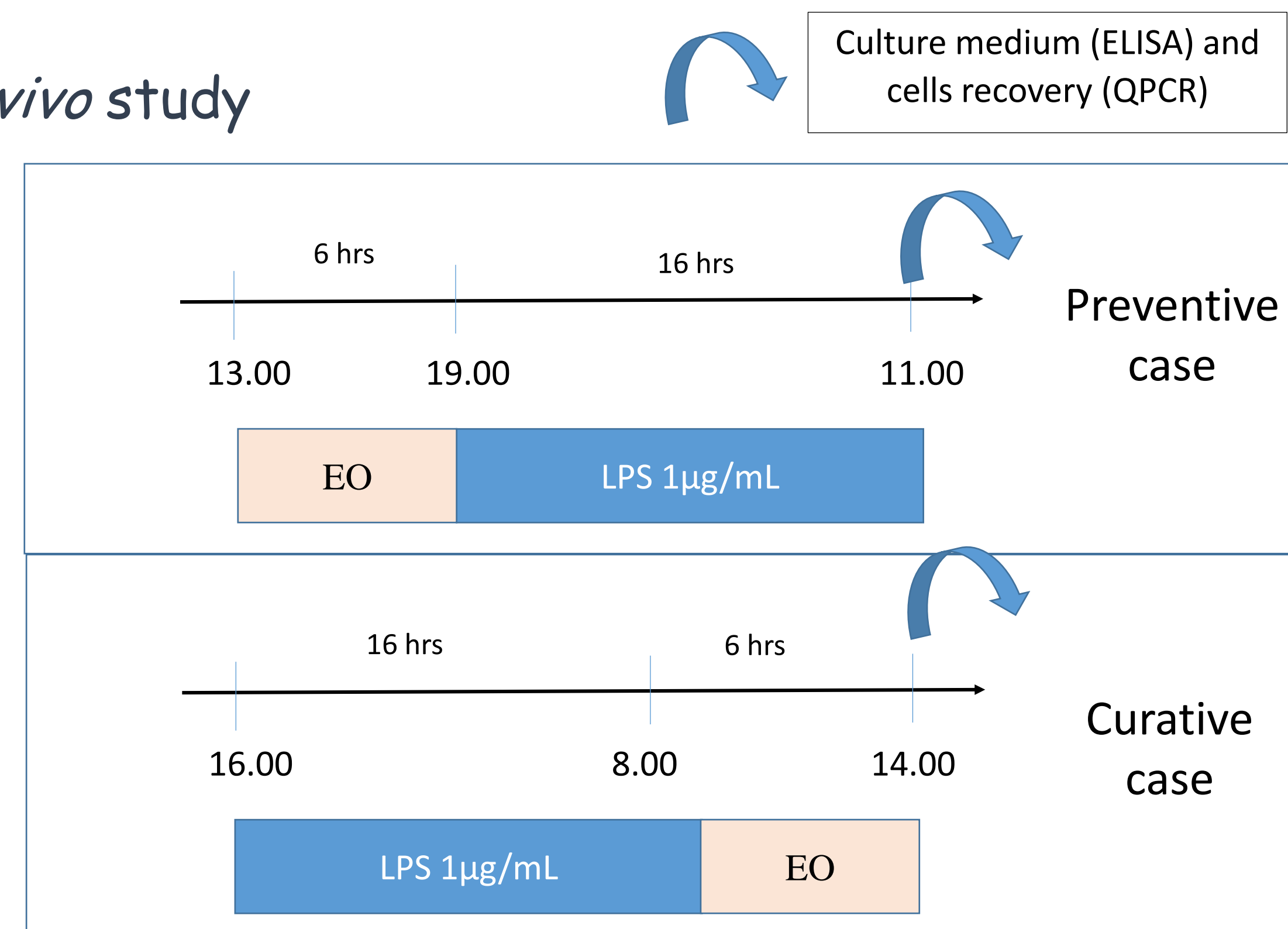
→ Exploration the effects of EO on subclinical mastitis via other routes of administration

MATERIAL AND METHODS

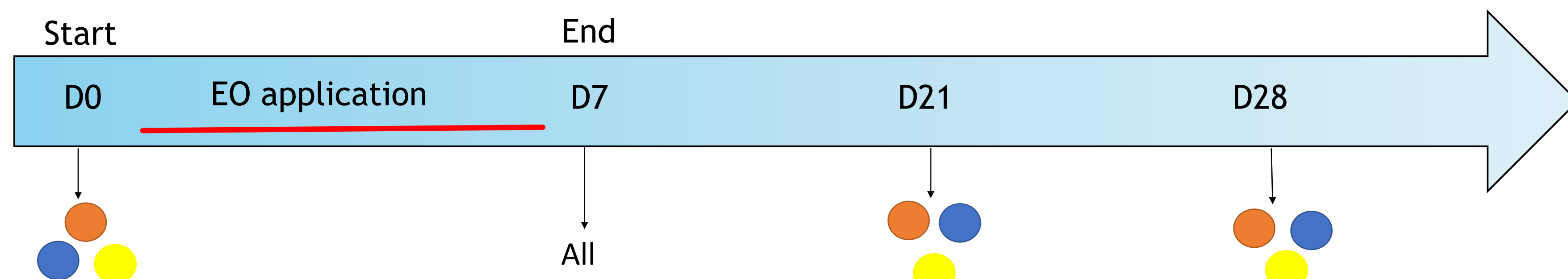
Ex vivo study



Fresh blood from jugular vein + PBMC isolation using Ficoll® Paque Plus



In vivo study



- Sensory and Technological analysis (zetasizer) ●
- Ohmic studies (Skin and milk microbiota) ●
- Marker of Inflammation (IL8 in milk using ELISA) ●
- Microbiological analysis ●
- Somatic cell counts : flow cytometer (2 times per week)

Scan here for more information



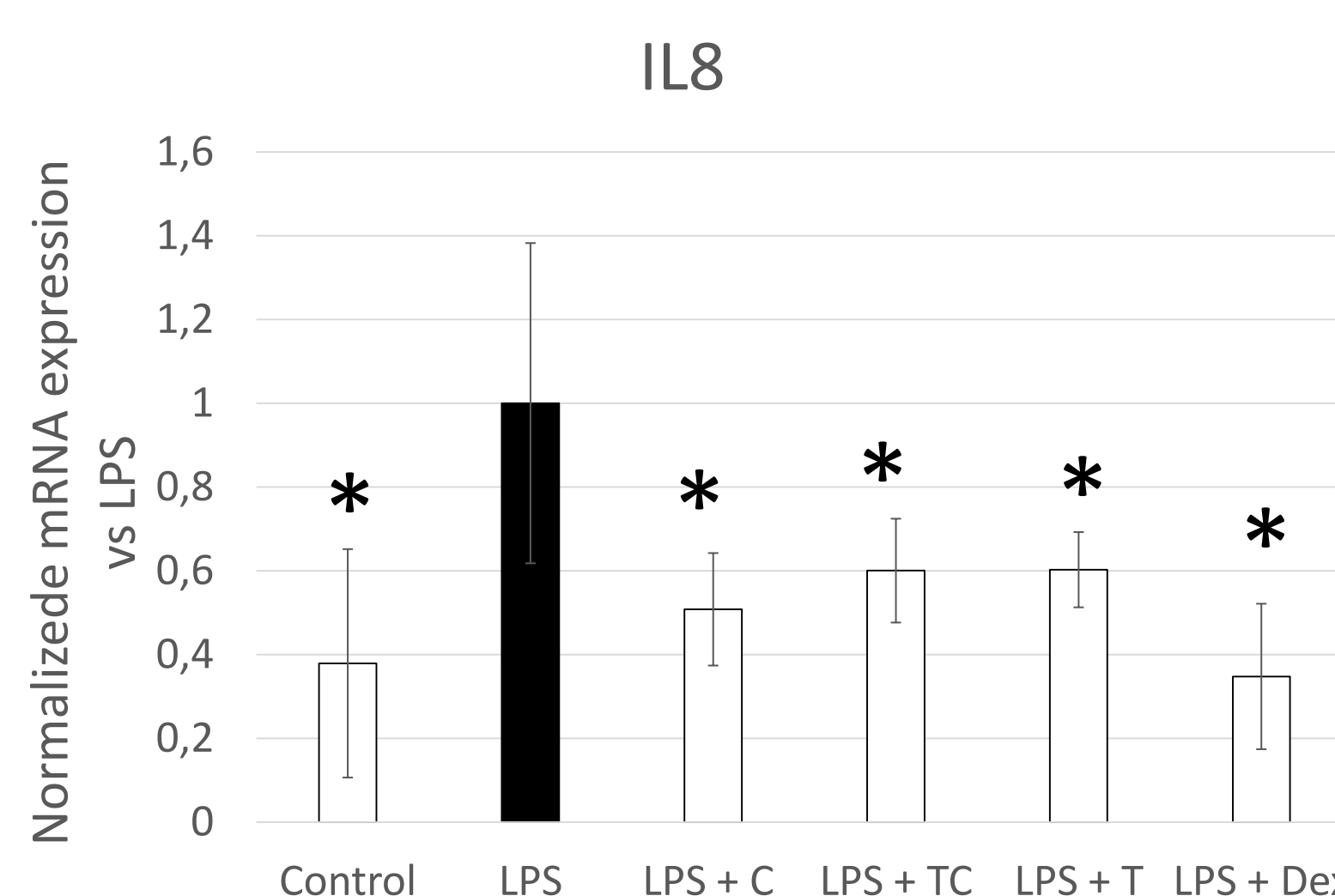
12 Holstein cows with SM : 6 control (C) and 6 treated (T)

Protocol : Application of TCEO (10%) on infected quarters during 7 days 2 times per day

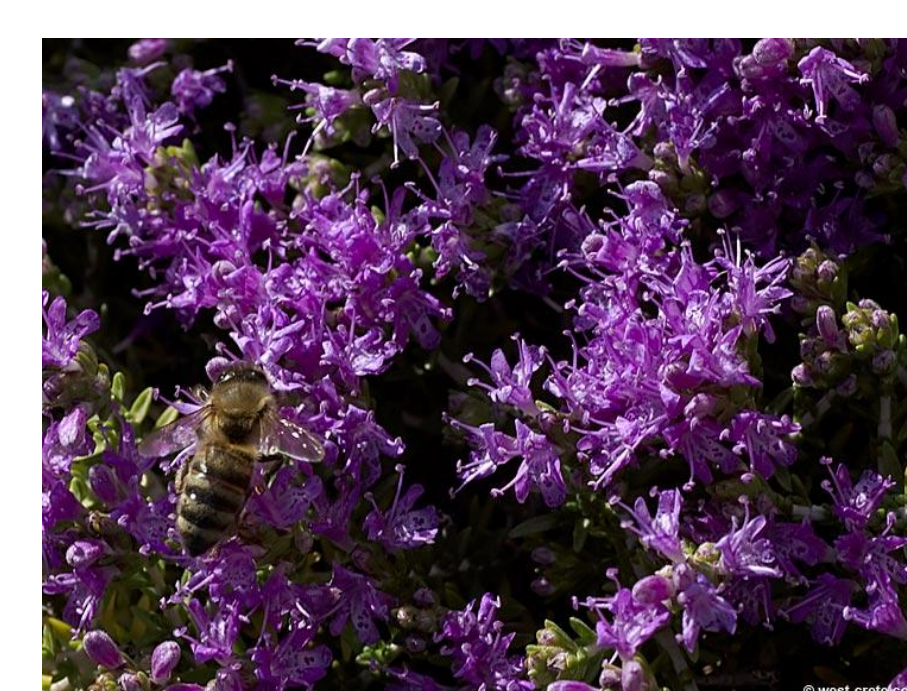
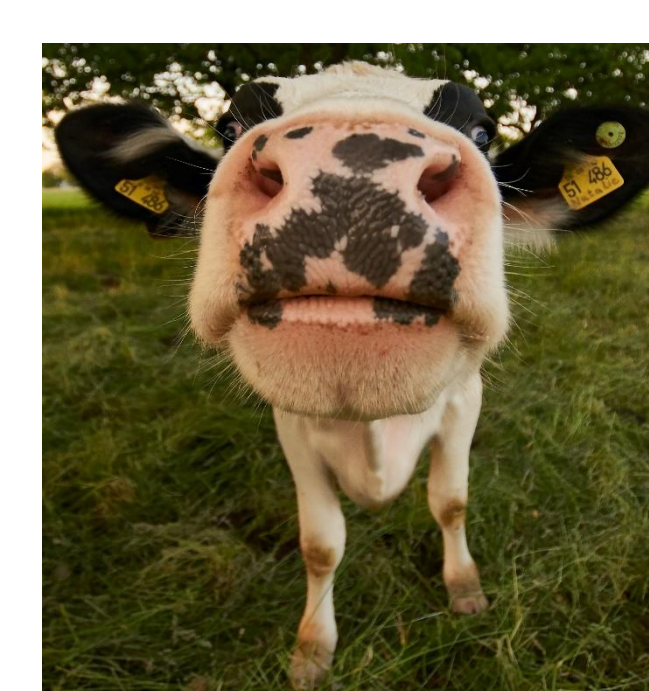
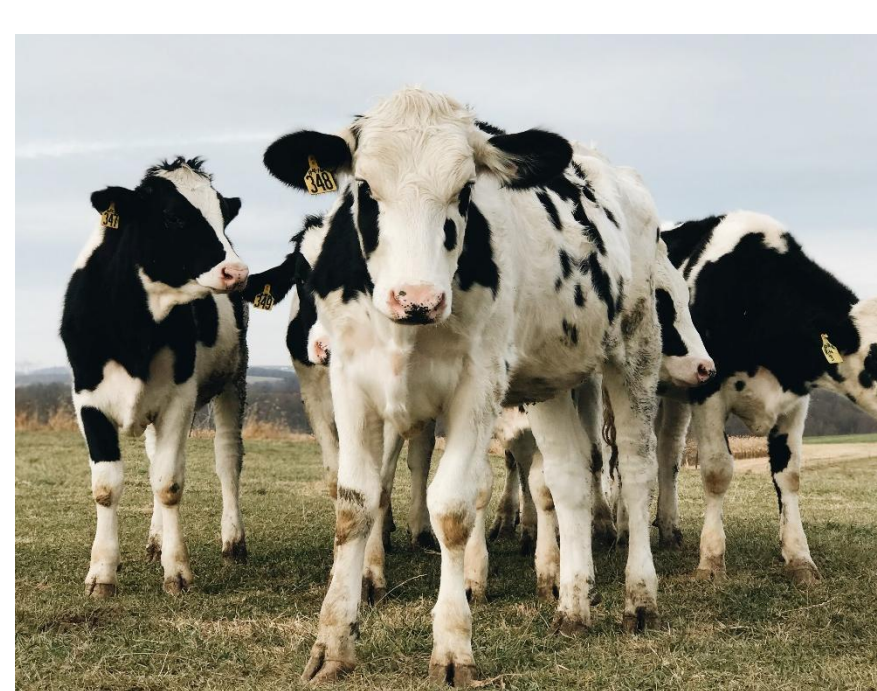
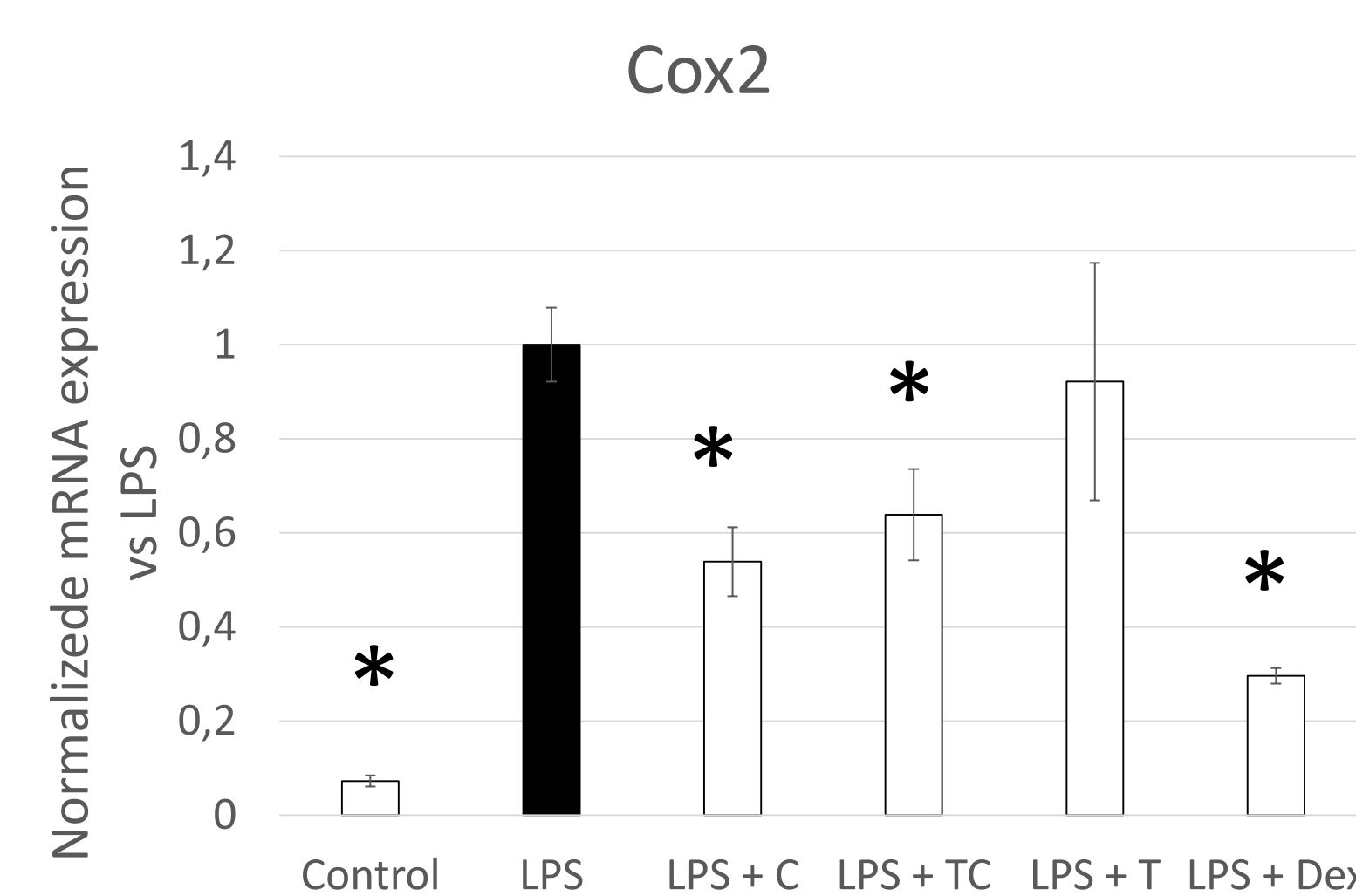
RESULTATS Ex vivo study

TCEO, T and C decrease the expression of some inflammatory genes as COX2, IL6 and TNF α in the curative and preventive cases as the dexamethasone (Dex; positif control).

Curative case



Preventive case



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