PhD School of Veterinary Sciences

XXXI cycle **Curriculum: Basic Sciences**

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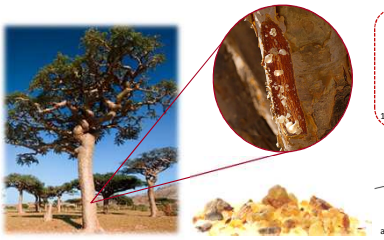
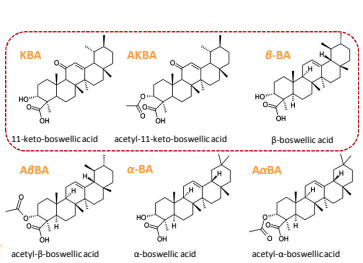
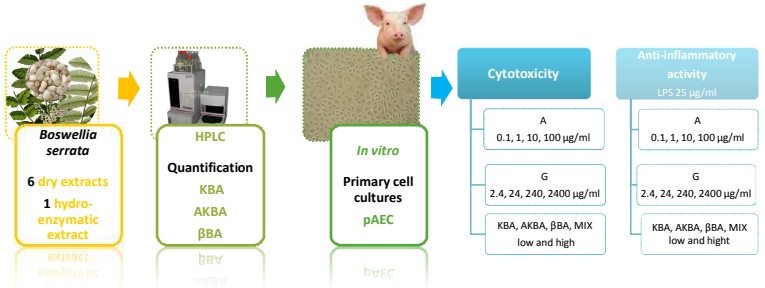
Characterization of *Boswellia serrata* extracts and evaluation of their effects on porcine Aortic Endothelial Cells







AIMS:

Extracts of the oleo-gum resin obtained from *Boswellia serrata* have been used since ancient times for the treatment of inflammatory diseases. **The purposes of this research were to characterize seven *B. serrata* commercial extracts and investigate if two of these extracts can attenuate the deleterious effect of lipopolysaccharide (LPS) in an *in vitro* model.**

HPLC analysis

Extracts characterization

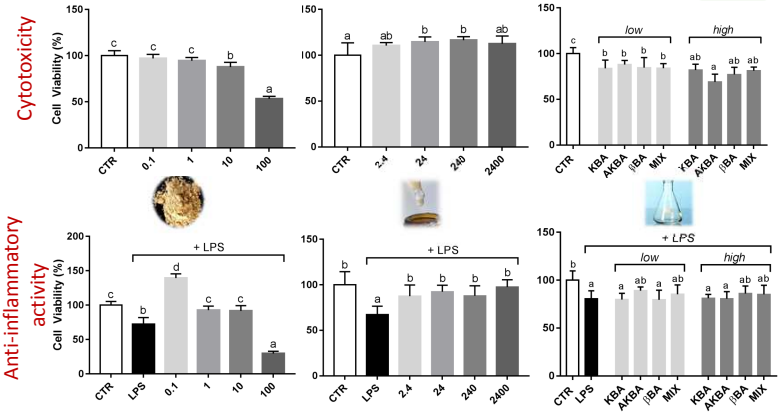
Extracts	KBA Concentration	% KBA in *B. serrata*	AKBA Concentration	% AKBA in *B. serrata*	βBA Concentration	% βBA in *B. serrata*
A	15.86±0.56	1.59±0.06	38.30±1.01	3.83±0.10	33.53±7.23	3.35±0.72
B	28.74±2.73	2.87±0.27	17.18±0.05	1.72±0.005	85.07±5.97	8.51±0.60
C	*nd*	*nd*	3.08±0.06	0.31±0.01	*nd*	*nd*
D	34.47±3.93	3.45±0.39	24.35±1.87	2.43±0.19	115.35±13.90	11.53±1.39
E	46.12±6.75	4.61±0.67	*nd*	*nd*	115.56±14.76	11.56±1.48
F	24.65±1.59	2.46±0.16	21.07±0.16	2.11±0.02	82.70±10.97	8.27±1.10
G	0.19±0.02	0.13±0.01	0.29±0.04	0.20±0.02	0.50±0.03	0.34±0.02

Concentration is expressed as mg/g of powder extract, with the exception of sample G (mg/mL of hydroenzymatic extract);
Percentage is expressed as g/100 g of powder extract, with the exception of sample G (g/100 mL of hydroenzymatic extract);
nd = not detectable.

HPLC analyses showed that different extracts from *B. serrata* contain different percentages of boswellic acids. Although all commercial extracts are titrated to 65% of boswellic acids, this percentage is unrealistic as evidenced by these results.

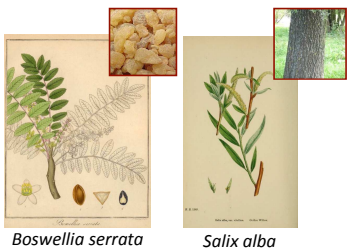
MTT Assay

In vitro studies



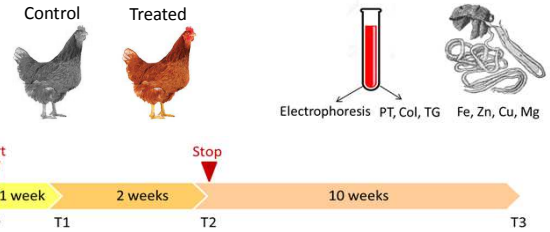
Our results confirm the anti-inflammatory activity of *B.serrata* extracts also on pAEC and emphasize the importance of the phytocomplex for the pharmacological action. However, attention should be paid to the composition of the commercial extracts.

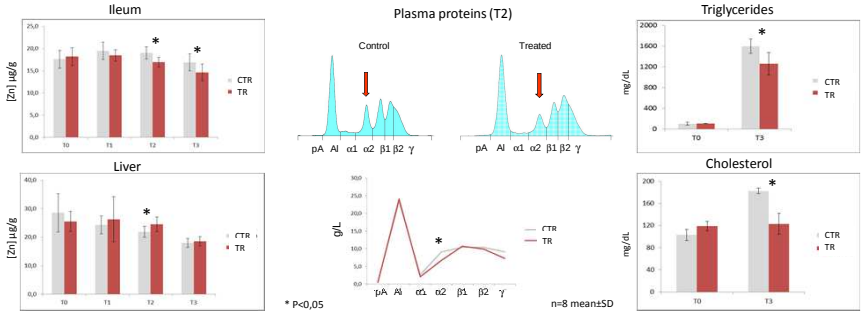
Anti-inflammatory activity of a feed supplemented with dry extracts of *Boswellia serrata* and *Salix alba* in laying hens



Boswellia serrata *Salix alba*

The resin of *Boswellia serrata* Roxb. And the bark of *Salix alba* L. are commonly used for their anti-inflammatory activity. Hens are frequently affected by inflammatory intestinal disorders during the critical period between the last vaccination and the early egg production, requiring pharmacological treatments. **The aim of the present research was to investigate the effect of a feed supplemented with extracts of *B.serrata* and *S.alba* in laying hens during this critical phase.**





- Laying hens of two farms
- feed supplemented with dry extracts of *B. serrata* (65% boswellic acids) and *S. alba* (30% salicin) (150 mg/Kg feed of each extract) for 3 weeks
- Liver, ileum and plasma samples (n=8) were obtained at fixed times, from treated and control animals.

This research, though preliminary, demonstrated an anti-inflammatory effect of a feed supplemented with dry extracts of *B.serrata* and *S.alba* in laying hens. These phytoextracts could reduce the risk of inflammatory conditions, while increasing the animal welfare and possibly the quality of animal productions.

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