Feed-a-Gene

Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems

# THE EFFECT OF GENETIC TYPE AND FEED RESTRICTION ON THE URINE METABOLOME OF GROWING RABBITS

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## Introduction

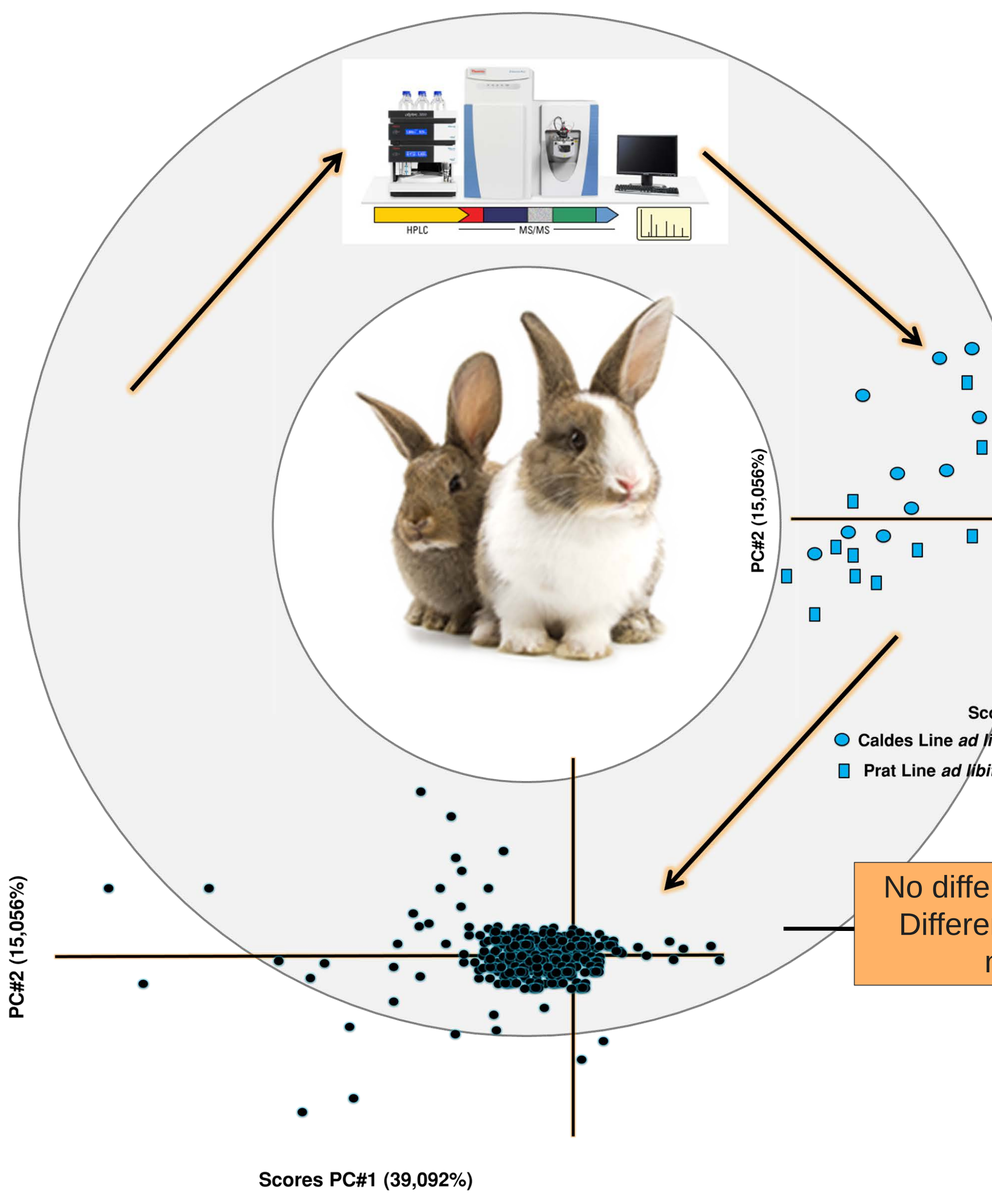
Studies in several species show a relationship between feed intake or genetic type and the urine metabolome (Soumeh et al., 2016)

However, there are few experiments where metabolites are identified in rabbits, and they are focused in determining the relationship of some metabolite with others (ZhiGang et al., 2013)

## Objectives

To investigate if genetic type and feed restriction affect the urine metabolome of growing rabbits

## Results and Discussion




No difference between lines
Differences between feed management

## Conclusions

There was no effect of genetic type on the urine metabolome.

Feed management highly influenced the urine metabolome. After ad libitum feeding the excretion of metabolites originating from microbial metabolism increased significantly. Feed restriction only increased the excretion of few metabolites.

## Materials and Methods

### Experimental diet and feed management

Diet was formulated according to current recommendations (de Blas and Mateos, 2010). Two kind of feed management were used; ad libitum or a feed restriction to 50% of maintenance requirements (50% MR)

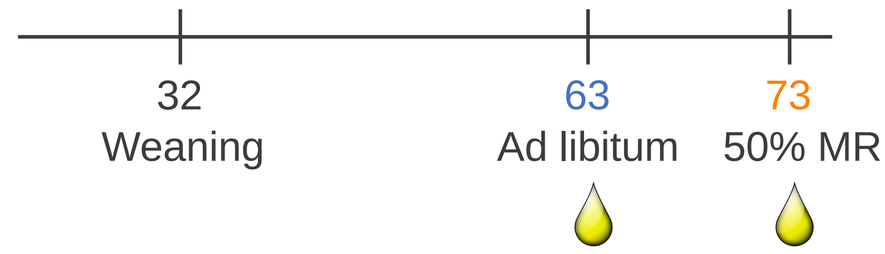
### Animals

N = 28 animals

N = 14 PRAT LINE: Selected for litter size at weaning

N = 14 CALDES LINE: Selected for post-weaning growth rate

### Experimental design

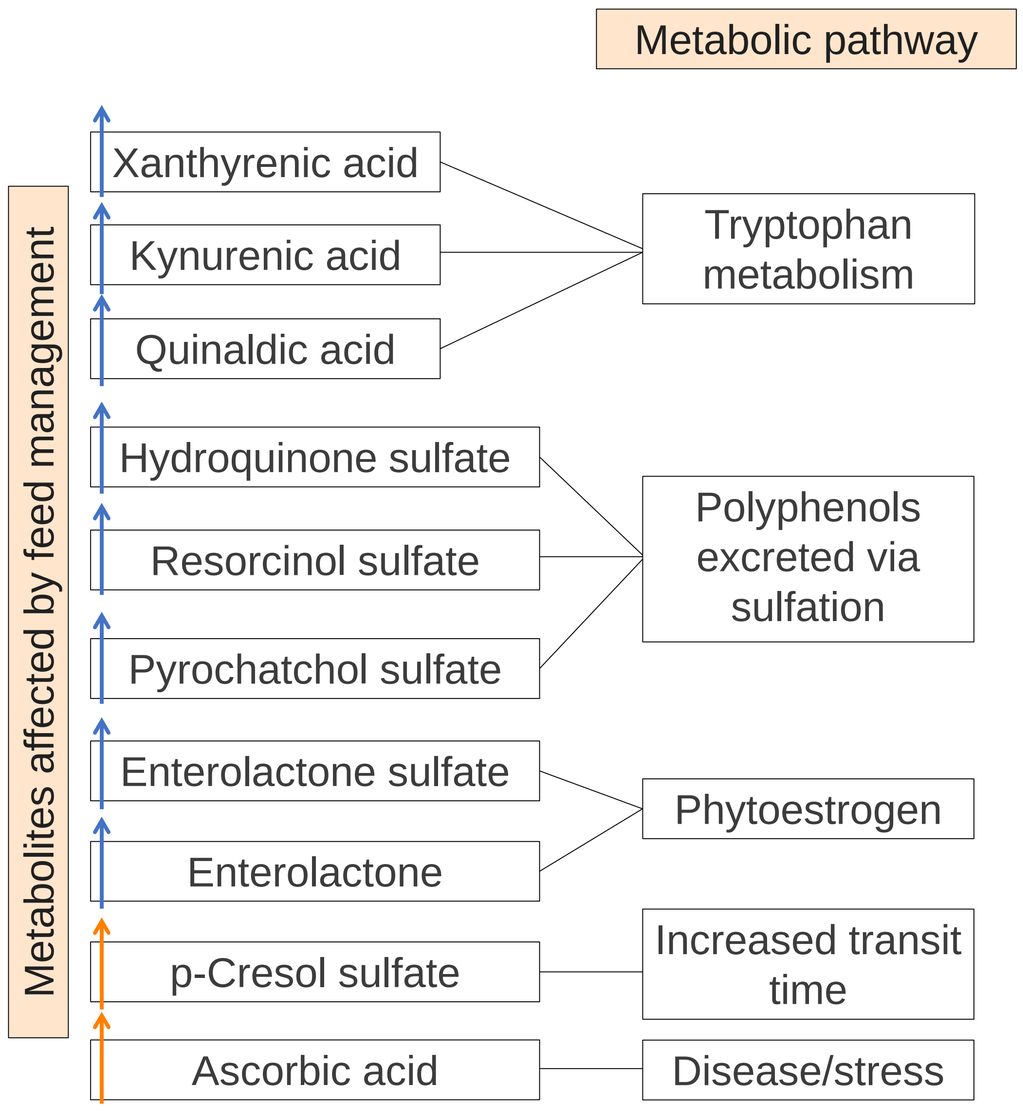



### Sample preparation for LC-MS

Urine samples were prepared for LC-MS acquisition as:

90 µL of urine + 90 µL of $H_2O$+ 20 µL of ACN

Samples were centrifuged (10 min at 13200 rpm, 4ºC) after a short vortex, and the supernatant was pipetted to HPLC vials for LC-MS analysis

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## References

De Blas and Mateos, 2010. Nutrition of the rabbit, p. 222-232
Soumeh et al., 2016, J. Proteome Res. 15: 4195-4207
Zhigang et al., 2013. Xenobiotica. 43: 628-635

Feed-a-Gene

Feed-a-Gene is a European H2020 project involving 23 partners which aims to adapt feeds, animals and feeding techniques to improve the efficiency and sustainability of pig, poultry and rabbit production systems. It is coordinated by INRA (France), started in March 2015 and will last 5 years. The project aims to reduce the environmental impact of monogastric livestock production by improving and diversifying animal diets and feed technologies and by integrating new selection criteria for these animals. The Feed-a-gene project further aims to develop new management systems for precision feeding and precision farming and to evaluate the overall sustainability of the different management solutions proposed in the project.

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