

# A DEFICIENT PROTEIN SUPPLY COULD BE AFFECTING SELECTION FOR GROWTH RATE IN RABBITS

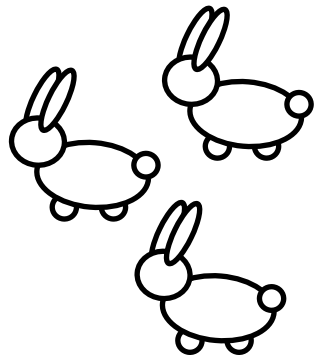
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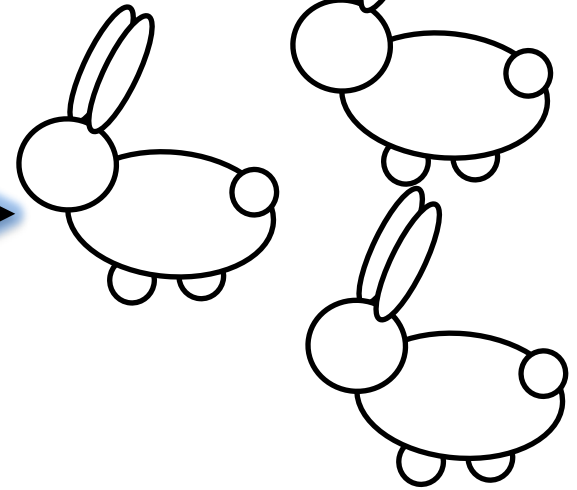
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# The problem



Genetic Selection

Improved FCR



Diets must provide enough quantity of protein and aa

Probably it changed their requirements

*“Now here, you see, it takes all the running you can do, to keep in the same place”*

# Before

Diets provided enough protein but...



# Currently...



Recomendation al

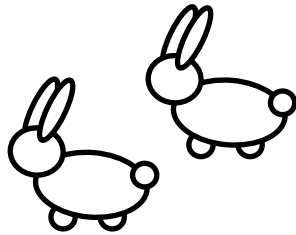
What happen with our  
new requirements?  
Maybe we can't meet  
all our potential!

# So



# Aim

To evaluate how a **common** growing **diet**, could be **affecting protein supply** and **amino acids retention** during the growing period in function of animals growth rate.



**N=175**

H LINE: selected by litter size at weaning

LP LINE: selected by litter size at weaning

R LINE: selected by average daily gain



**D=28**



**½ Slaughtered**



**D=63**



**½ Slaughtered**

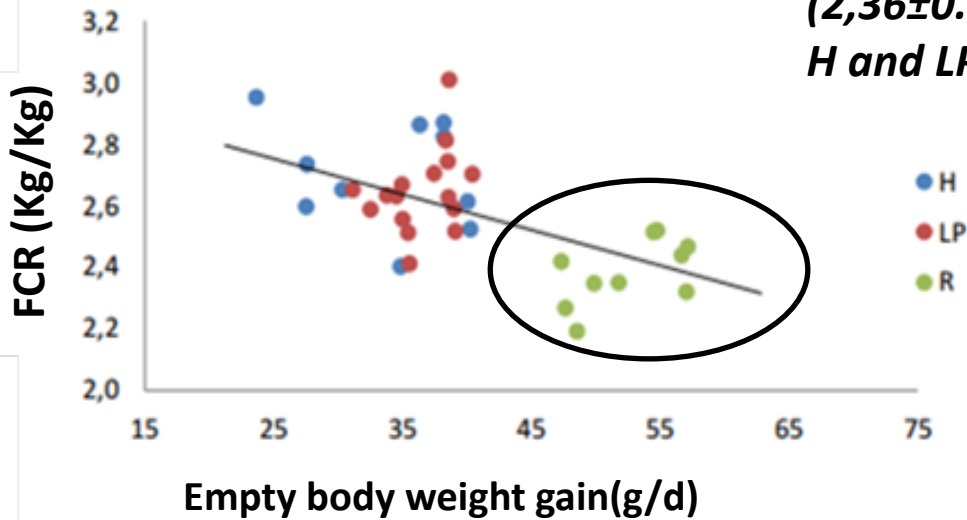
*Digestible protein: 120,5 g/kg feed*

*✓ Body Weight and Feed Intake*

*✓ Empty bodies crushed and lyophilized*

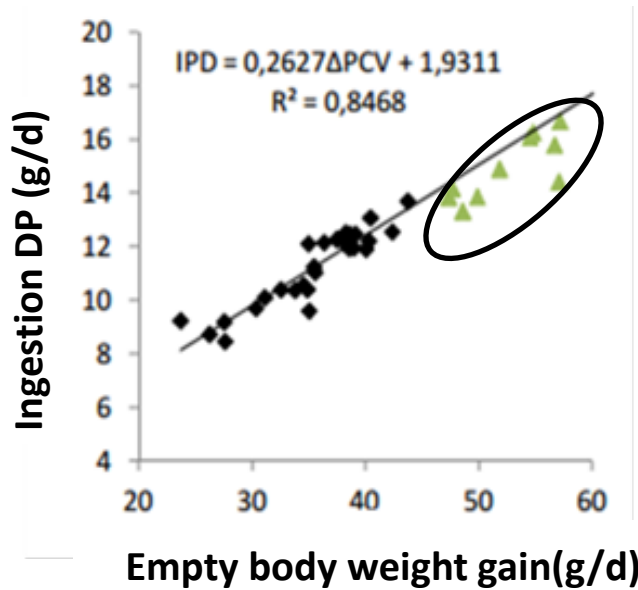
*Retention of protein and aa were studied*

✓ *R* animals have better FCR than *H* and *LP* ( $2,36 \pm 0,05$ ,  $2,70 \pm 0,05$  and  $2,65 \pm 0,04$  for *R*, *H* and *LP* animals, respectively;  $P < 0,05$ )



	Feki (1996)		Our work:	
	Maternal lines	Paternal lines	Maternal lines	Paternal lines
FCR	3,06 kg/kg	2,73 kg/kg	2,68 kg/kg	2,36kg/kg
Diference	<b>11%</b>		<b>11%</b>	

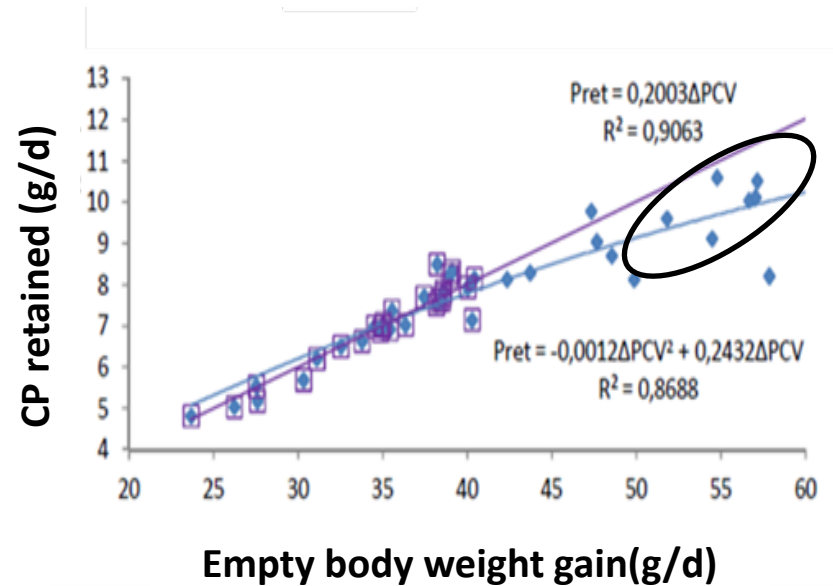
*It reveal a lack of effectiveness...*



✓ *R animals have greater IPD, but lower to that expected*

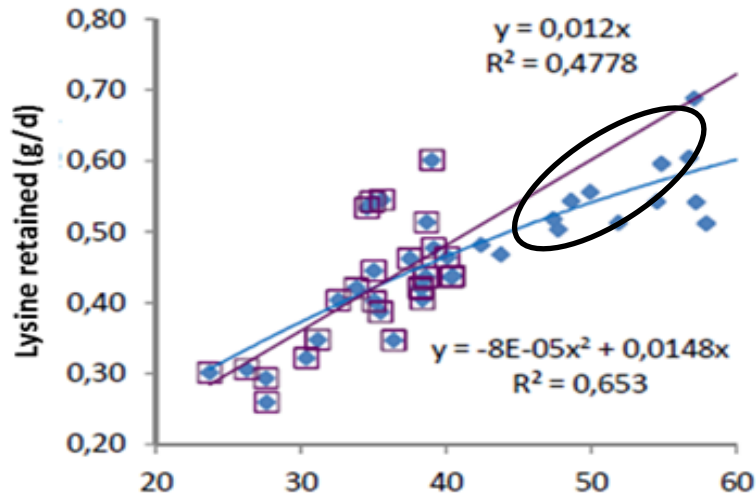
Empty body weight gain(g/d)

✓ *Animals with an EGW up to 45 g/day showed a lower protein retention to that expected*

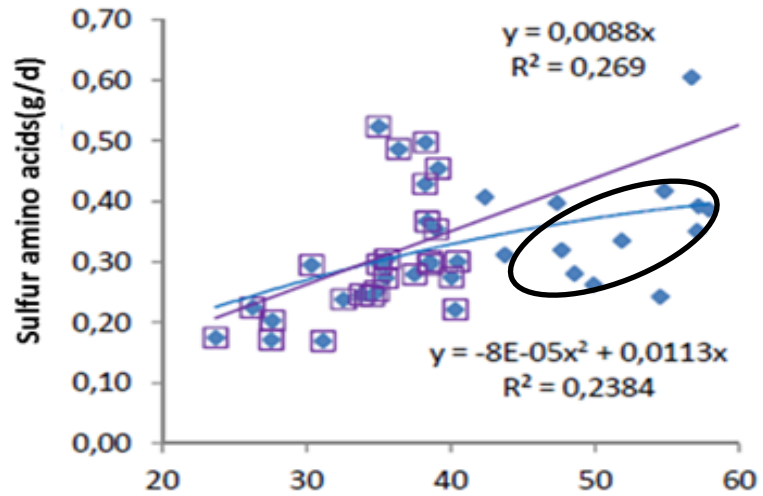


Empty body weight gain(g/d)

*Could be related to a lack on some limiting aa?*



Empty body weight gain(g/d)

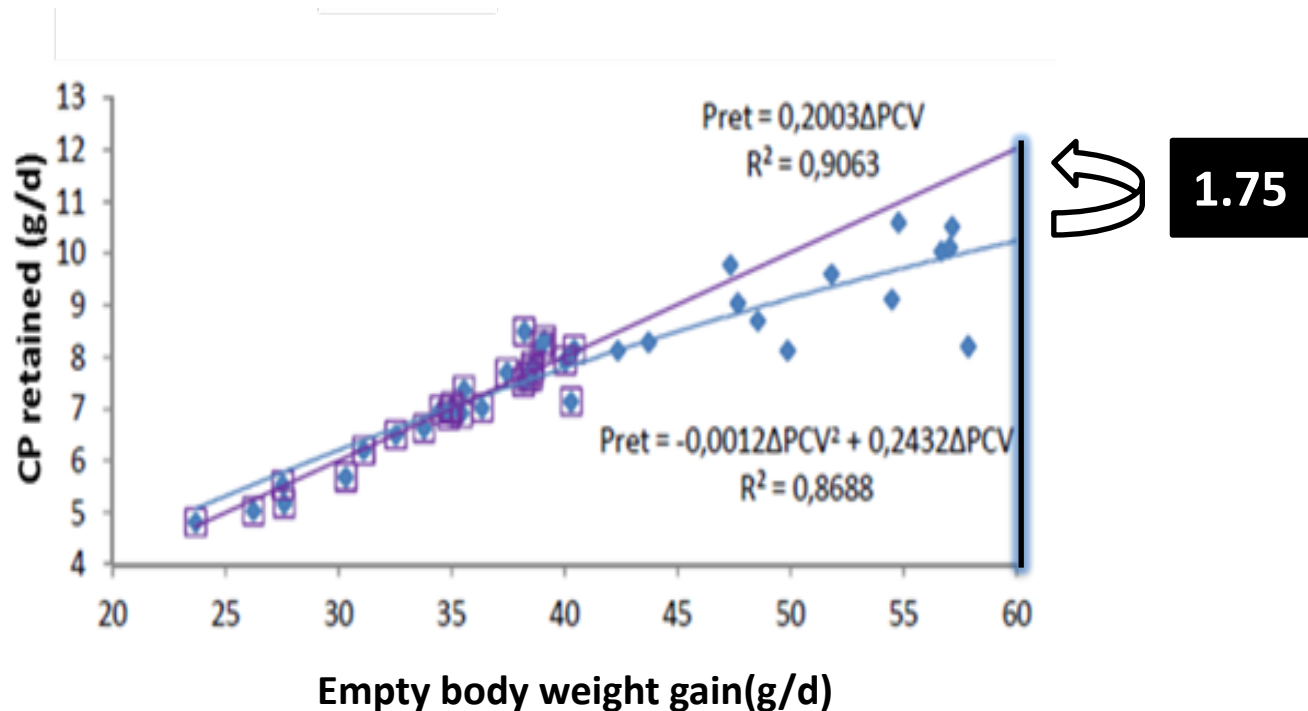


Empty body weight gain(g/d)

✓ The same response presented when aa retained.



From these figures... A **key** rabbit with an empty body weight gain of **60g/d** need to increase its protein retention in 1.75, with an efficiency value of 0.63, they would need a diet with at least **135.7 g DP/Kg** , or an adjustment of the limiting aa.



# Conclusions

**A POSSIBLE PROTEIN DEFICIT EXISTS WHEN HIGH GROWTH RATE ANIMALS ARE FEED WITH A COMMON DIETS, THAT COULD BE HINDERING THE SELECTION PROCESS. DETERMINING CONCENTRATION OF LIMITING AMINO ACIDS REQUIREMENTS IN FUNCTION OF GROWTH RATE WILL BE NEED.**



# ARE GROWING DIETS PROVIDING ENOUGH PROTEIN TO HIGH GROWTH RATE RABBITS?



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# ... BUT WE CONTINUE WORKING

## 1 INTRODUCTION

Genetic selection has improved growth rate but probably it has changed animal requirements. Current growing diets ensure enough protein supply to crossbred animals. However, animals with high growth rate (>50 g/d) could have difficulties to express all their genetic potential punishing the progress of genetic select

Our hypothesis was that common diet enough protein to high growth rate rabbits

## 2 OBJECTIVE:

To evaluate how a growing diet could be affecting in conversion rate and ileal digestion function of animals growing

## 3 MATERIALS & METHODS

### EXPERIMENTAL DIET:

Was formulated according to current (Blas and Mateos, 2010; Feed Formulation Rabbit, 222-232. CABI)

Diet chemical composition	
Digestible energy	11,5 MJ/kg
Digestible protein	111 g/kg
Acid detergent fibre	159 g/kg
Lysine	7,54 g/kg
Methionine	2,55 g/kg
Cysteine	2,28 g/kg

### ANIMALS:

N=140 animals with high variability weight gain

- H LINE: Maternal line selected by litter
- LP LINE: Maternal line selected by litter
- R LINE: Paternal line selected by average

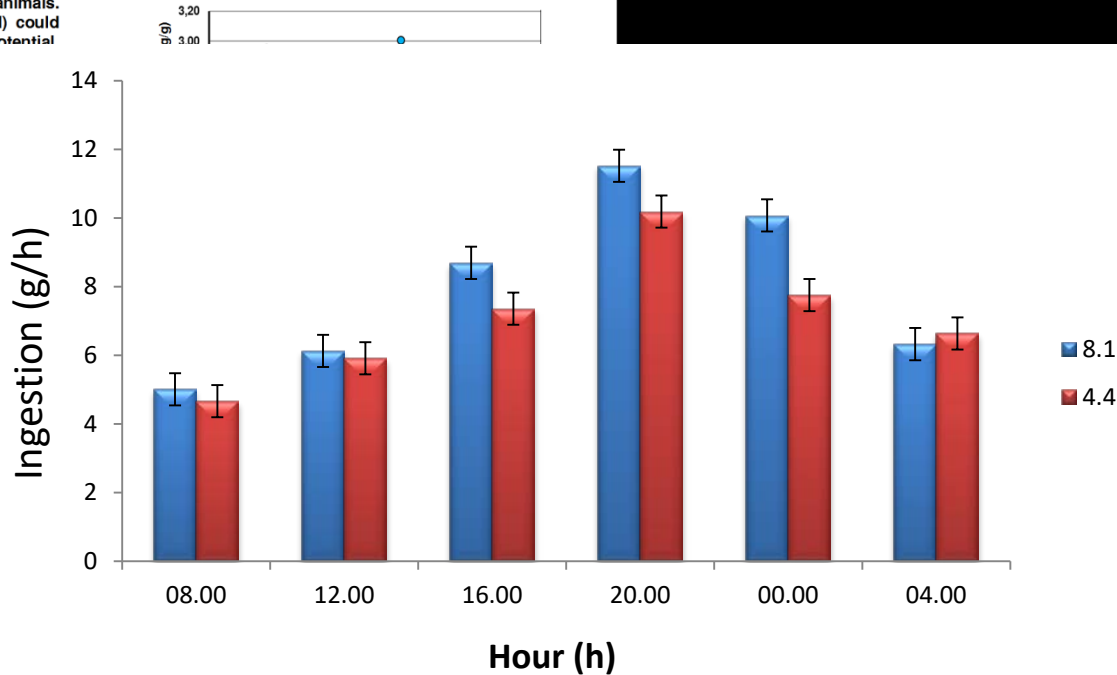
### TRAITS CONTROLLED:

Dry matter (DM) intake- daily weight gain and feed conversion ratio (FCR) (28 to 63 days of life)

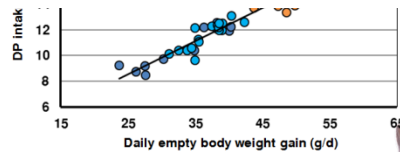
Analysis of ileal content at 63 days (using a Yb- marked version of feed from 53 to 63 days of life)

## 4 RESULTS

As expected, growing rabbits characterized by higher daily weight gain had higher feed intake and better FCR



### Daily empty body weight gain (g/d)



## 5 CONCLUSIONS:

A possible protein deficit on growing rabbits with a high growth rate exists when they are fed with a common diet (146 g CP/kg). It could be punishing their genetic potential expression



**...WE STILL WORK...**

**THANKS FOR YOUR ATTENTION...**

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