Dietary protein optimization using a rabbit model: towards a more sustainable production in nitrogen

Marín-García, P.J., López, M.C., Ródenas, L., Martínez-Paredes, E., Blas, E., Pascual, J.J.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

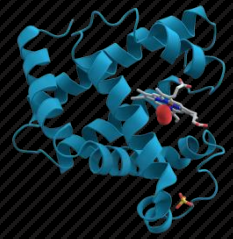
Experimental management

Easy
Cheap
Prolific

Livestock is one of the main sources of N contamination worldwide

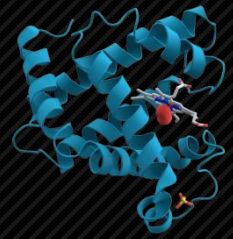
Livestock is one of the main sources of N contamination worldwide

The main causant of this contamination is protein



Livestock is one of the main sources of N contamination worldwide

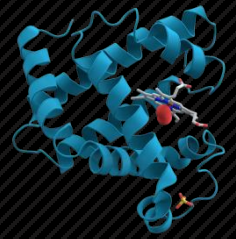
The main causant of this contamination is protein



A correct amino acids adjustment maximizes protein retention Lys, sAA y Thr

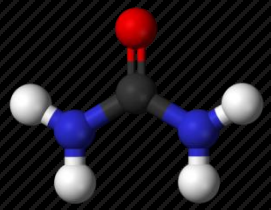
Livestock is one of the main sources of N contamination worldwide

The main causant of this contamination is protein



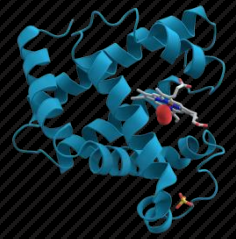
A correct amino acids adjustment maximizes protein retention Lys, sAA y Thr

Plasmatic Urea Nitrogen (PUN). Indicator



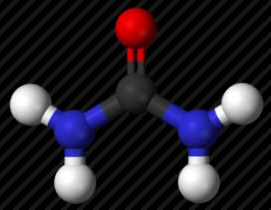
Livestock is one of the main sources of N contamination worldwide

The main causant of this contamination is protein



A correct amino acids adjustment maximizes protein retention Lys, sAA y Thr

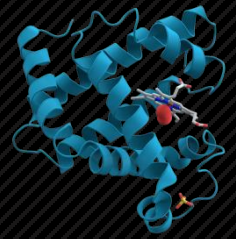
Plasmatic Urea Nitrogen (PUN). Indicator



Less PUN. Better use ! (Marín-García, 2017)

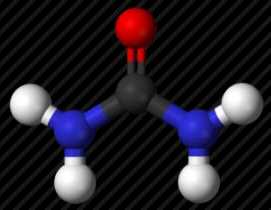
Livestock is one of the main sources of N contamination worldwide

The main causant of this contamination is protein



A correct amino acids adjustment maximizes protein retention Lys, sAA y Thr

Plasmatic Urea Nitrogen (PUN). Indicator



Less PUN. Better use ! (Marín-García, 2017)

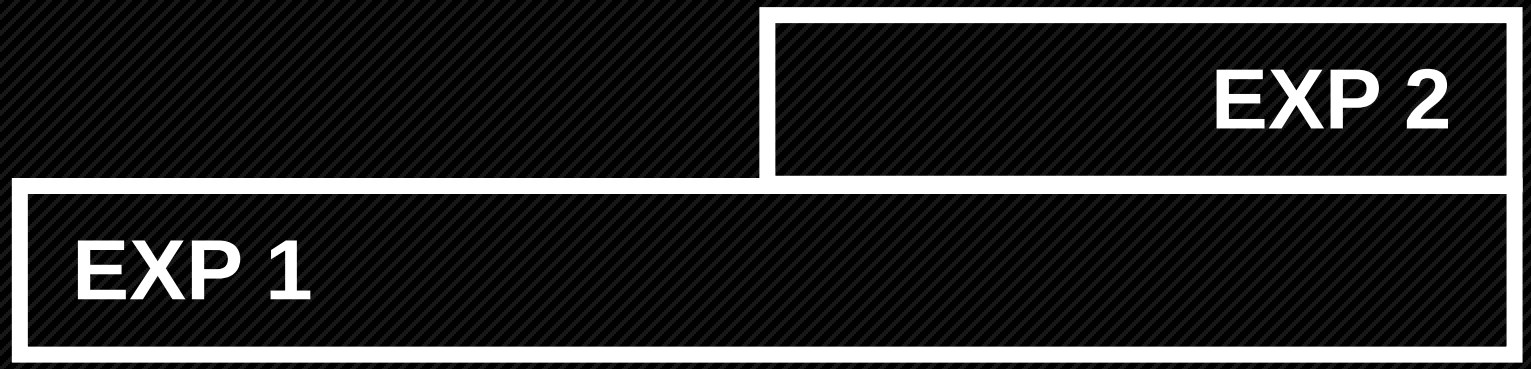
Does it affect the productive parametres?

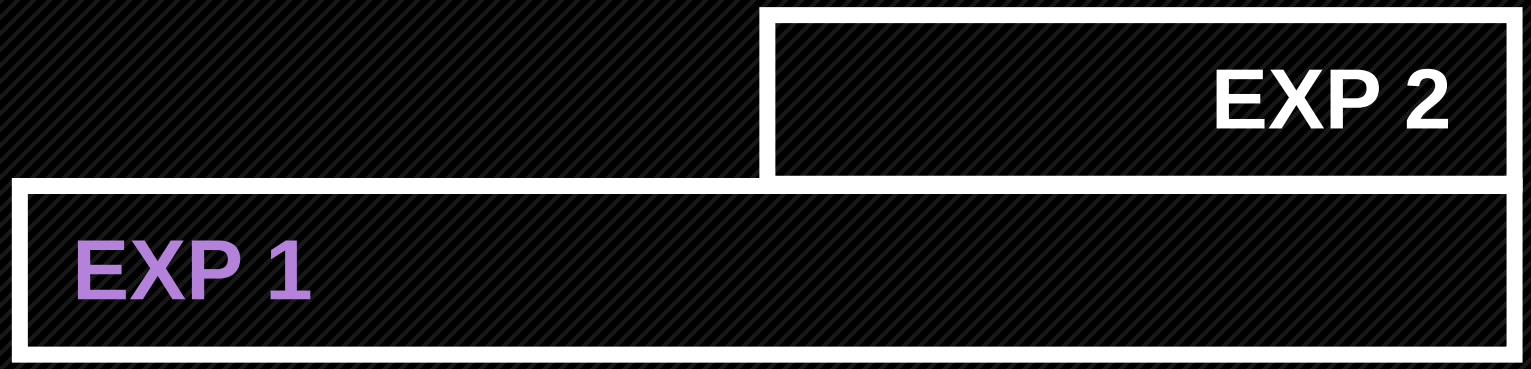
TOTAL

FAECAL

ILEAL

TO PROPOSE A MODEL BASED ON THE PUN TO OPTIMIZE PROTEIN NUTRITION, USING THE RABBIT AS A MODEL. GO TOWARDS A MORE SUSTAINABLE PRODUCTION IN NITROGEN CONTAMINATION


EXP 2
EXP 1


EXP 2
EXP 1

EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN

EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN

Lys

sAA

Thr

EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN

Lys	High
sAA	Medium
Thr	Low

EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN

Lys	High	+15%
sAA	Medium	RECOMMENDATIONS
Thr	Low	-15%

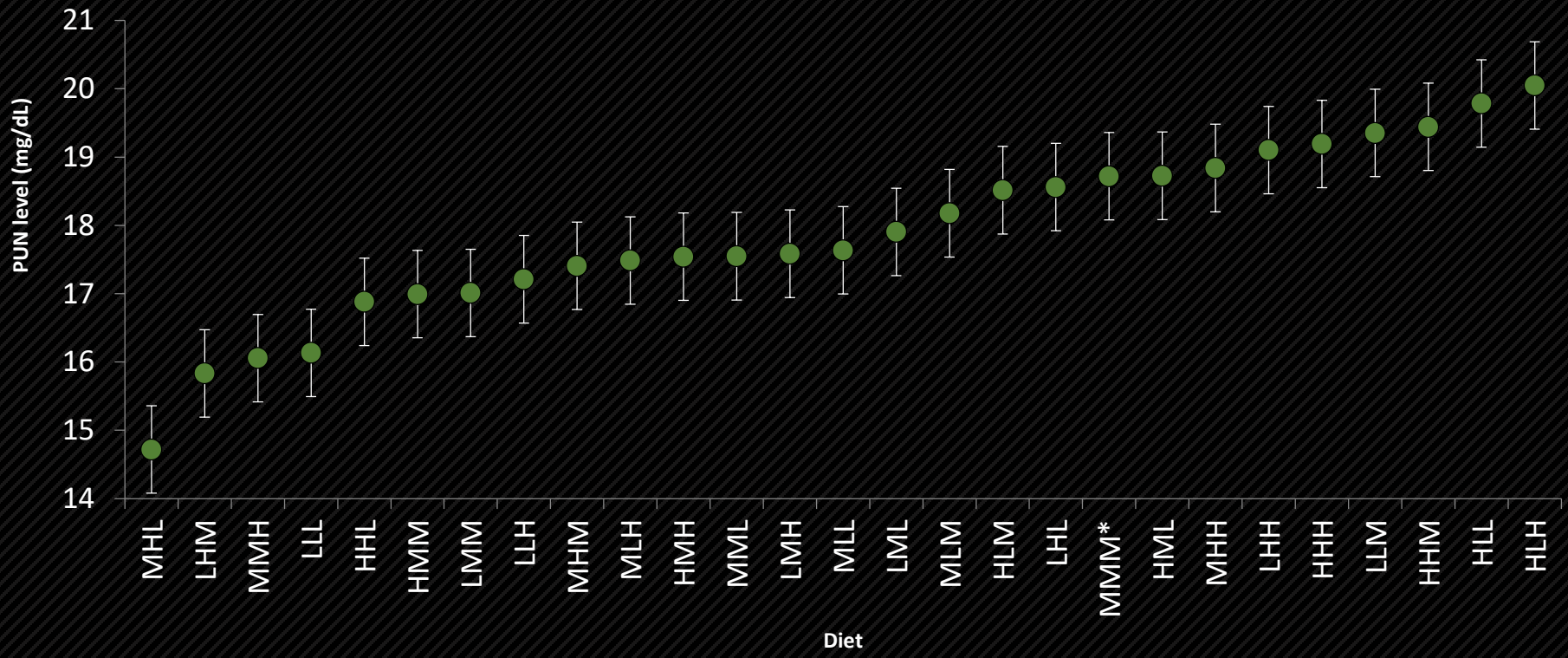
EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN

Lys	High	+15%
sAA	Medium	RECOMMENDATIONS
Thr	Low	-15%

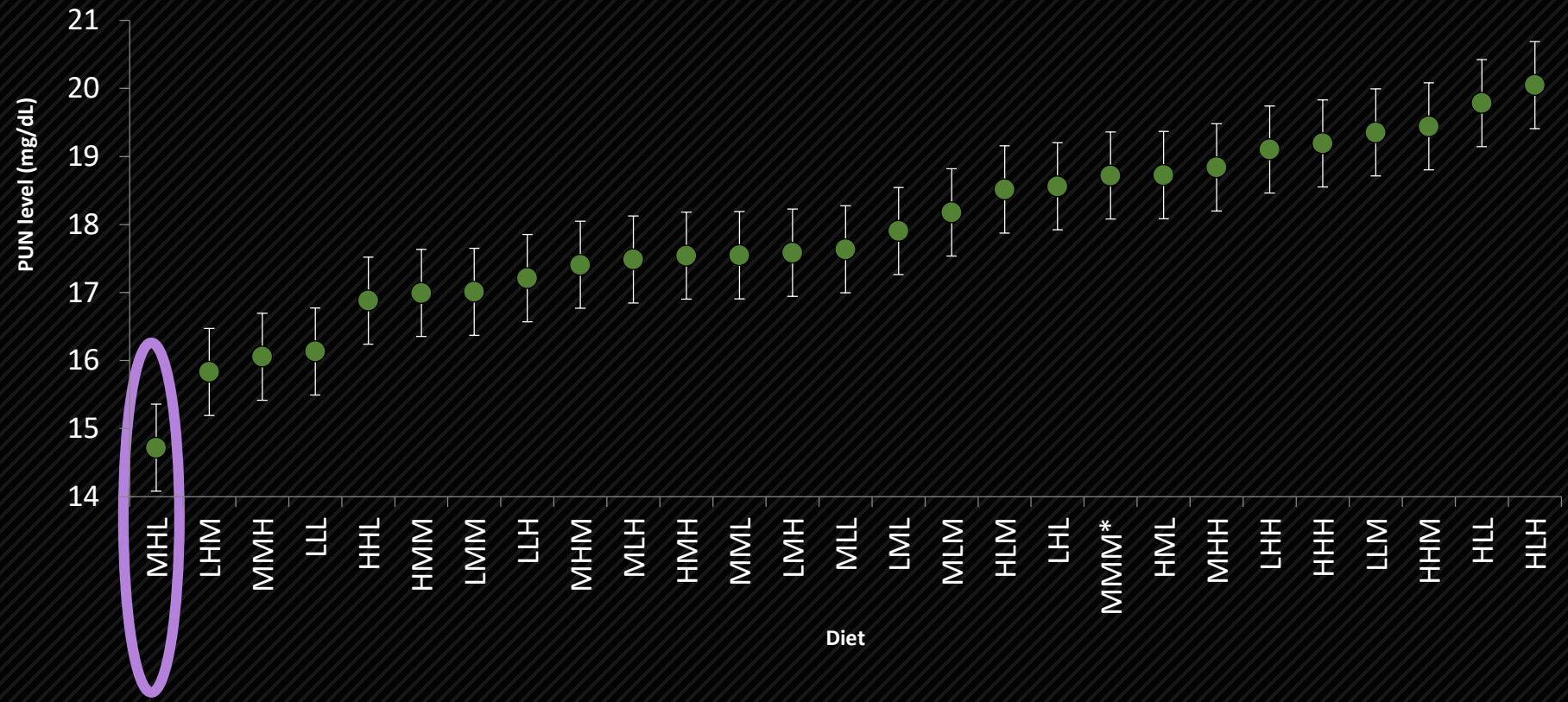
EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN



EXP 1

TO FIND THE COMBINATION OF TOTAL AA THAT MINIMIZES THE PUN



EXP 1

MHL

Lys = *De Blas y González-Mateos, 2010*

sAA + *Xicatto y Trocino, 1998*

Thr − *Nicodemus et al., 1999*

EXP 2

MHL

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

116 ANIMALS

MHL

MMM

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

116 ANIMALS

MHL

MMM

INTAKE

GROWTH RATE

FEED CONVERSION RATIO

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

116 ANIMALS

MHL

MMM

INTAKE

GROWTH RATE

FEED CONVERSION RATIO

TOTAL

FAECAL

ILEAL

EXP 2

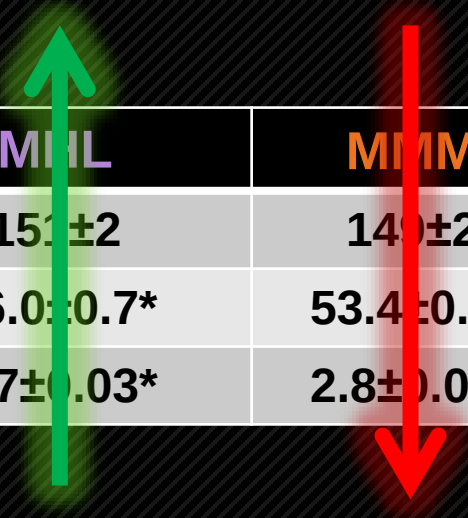
EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

	MHL	MMM
INTAKE (g/d)	151±2	149±2
GR (g/d)	56.0±0.7*	53.4±0.8*
FCR (g/g)	2.7±0.03*	2.8±0.03*

** P<0,05*

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY

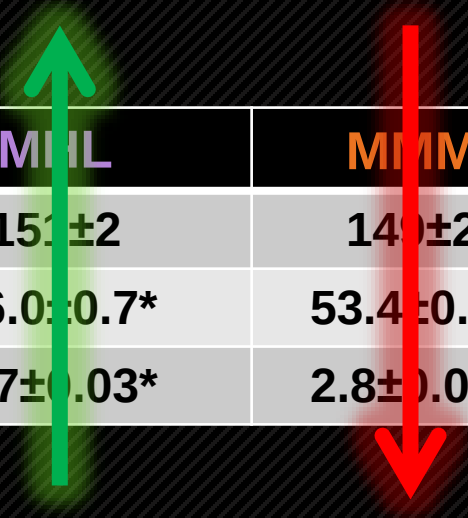


	MHL	MMM
INTAKE (g/d)	151±2	149±2
GR (g/d)	56.0±0.7*	53.4±0.8*
FCR (g/g)	2.7±0.03*	2.8±0.03*

** P<0,05*

EXP 2

EFFEC OF A COMBINATION THAT MINIMIZES THE PUN ON THE PRODUCTIVE PARAMETRES AND ITS ILEAL DIGESTIBILITY



	MHL	MMM
INTAKE (g/d)	151±2	149±2
GR (g/d)	56.0±0.7*	53.4±0.8*
FCR (g/g)	2.7±0.03*	2.8±0.03*

	MHL	MMM
Lys (g/Kg MS)	5.2	5.2
sAA (g/Kg MS)	4.7	3.6
Thr (g/Kg MS)	3.0	4.3

** P<0,05*

New recommendations: 5.2, 4.7 y 3.0 g/Kg DM for Lys, sAA y Thr. The mehtod for to optimize protein nutrition using rabbit as a model is valid

Dietary protein optimization using a rabbit model: towards a more sustainable production in nitrogen

Marín-García, P.J., López, M.C., Ródenas, L., Martínez-Paredes, E., Blas, E., Pascual, J.J.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA