



 **World
Rabbit
Congress**
2016
Qingdao, China

Convegno ASIC 2016
11th WRC: Inviati speciali in Cina

30 settembre 2016, Padova



11th WORLD RABBIT CONGRESS, 15-18 June 2016, Qingdao, China

1. REPRODUCTION

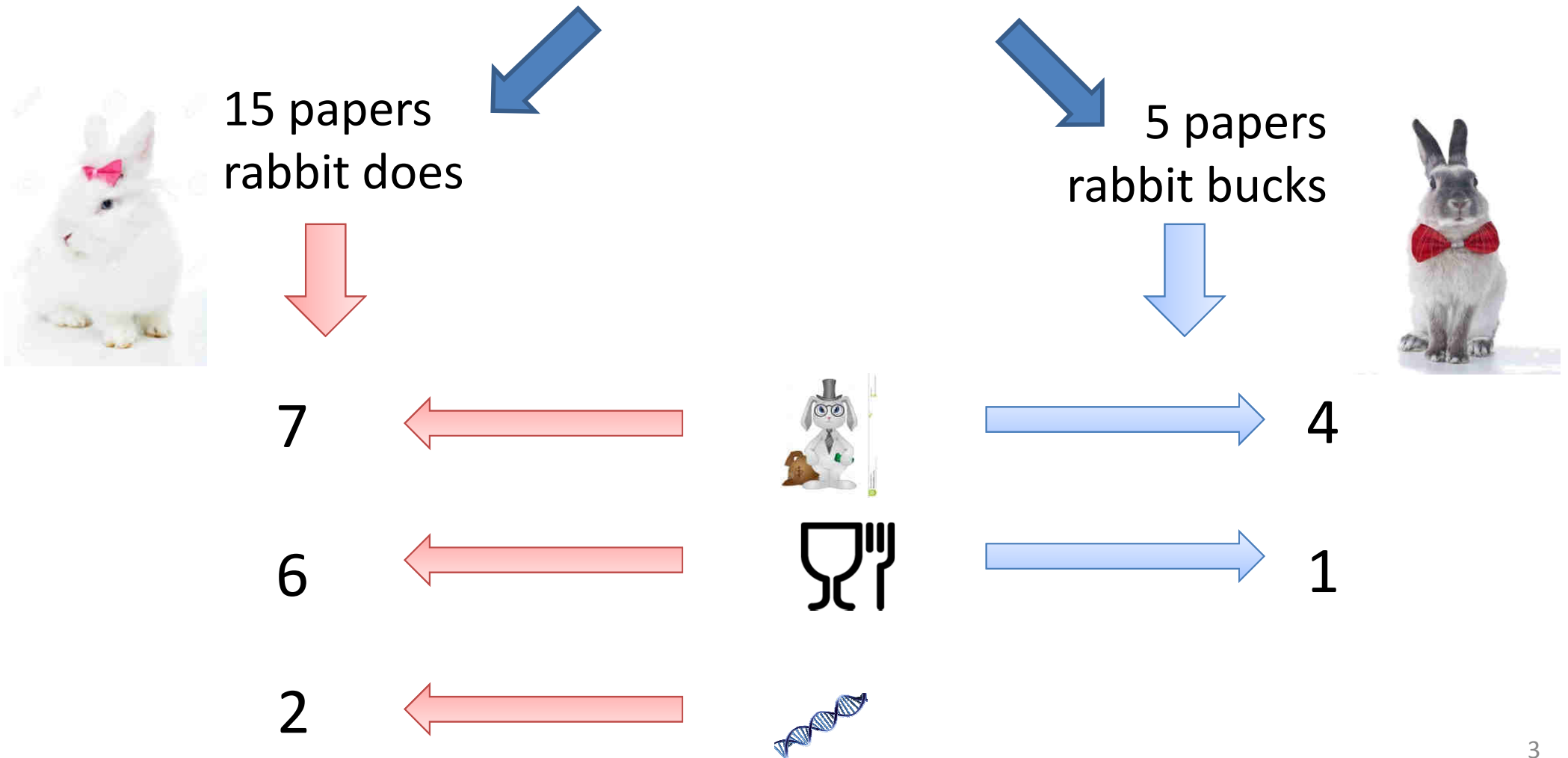
Simona Mattioli

Università degli Studi di Perugia

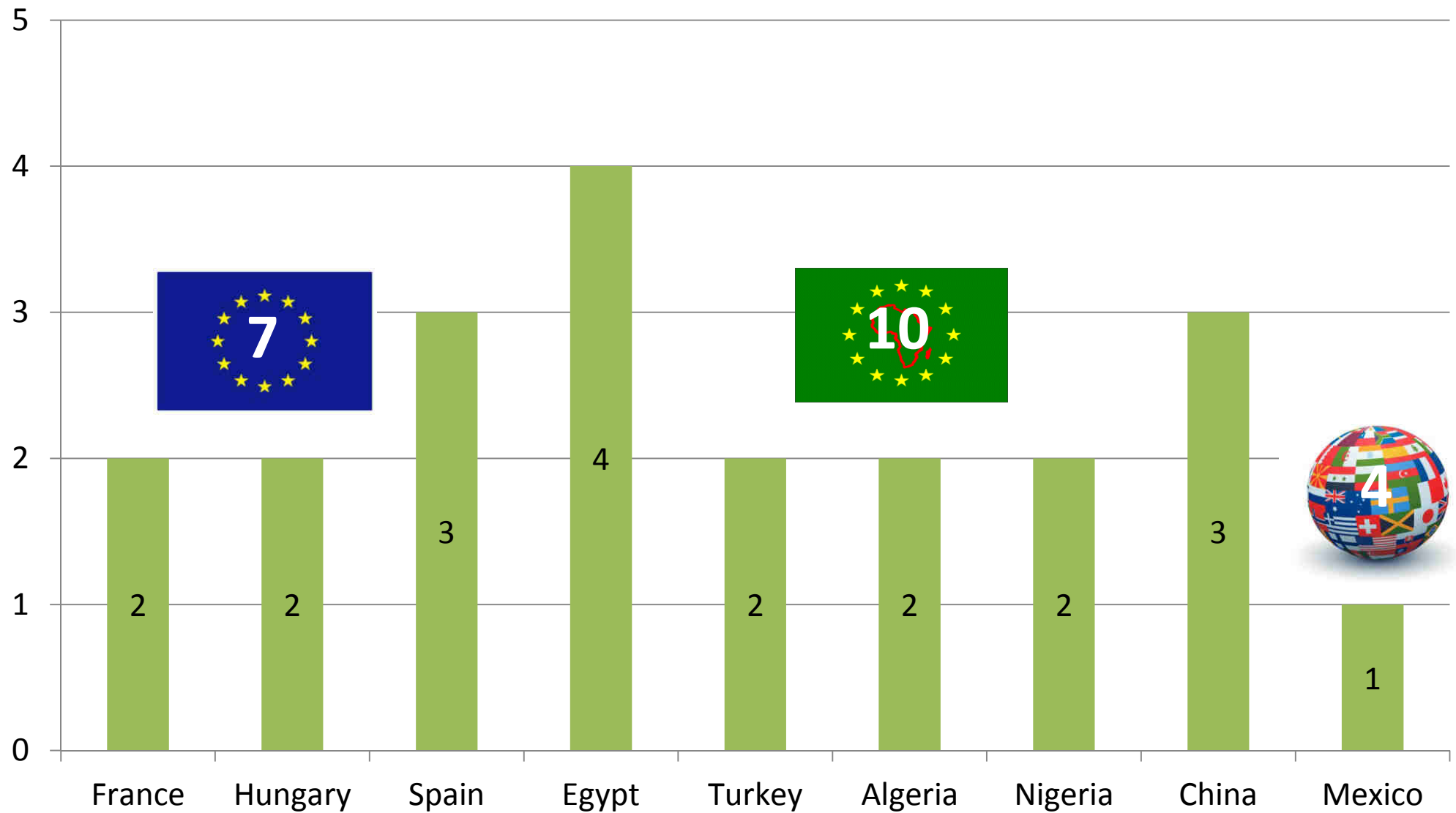


20 papers
+

1 INVITED PAPER
heat stress



Repro Papers by country





TOPICS

1. SUPPLEMENTATION OF EXTENDER WITH REDUCED GLUTATHIONE (GSH) PRESERVES RABBIT SPERM QUALITY AFTER CRYOPRESERVATION. Ahmad et al. (Turkey)
2. SPERM MOTILITY TRAITS OF COOLED RABBIT SEMEN WITH DIFFERENT LEVELS OF MELATONIN. Dessouki et al. (Egypt)
3. OLIRAV: A SIMPLE, DISPOSABLE RABBIT ARTIFICIAL VAGINA DEVICE/PROCEDURE. Ola (Nigeria)
4. EFFECTS OF IMMUNIZATION AGAINST INHIBIN ON THE SEMEN QUALITY IN REX RABBITS IN SUMMER. Wang et al. (China)
5. DIETARY QUERCETIN MIGHT ALLEVIATE HEAT STRESS-INDUCED TESTICULAR HISTOPATHOLOGICAL CHANGES IN RABBITS. Zahid et al. (Turkey)



1. MOLECULAR CLONING AND MRNA EXPRESSION ANALYSIS OF GDF9 GENE IN NEW ZEALAND WHITE RABBITS. Sun et al. (China)
2. PHENOTYPIC VARIATION OF TEAT NUMBER IN CHUANBAI REX RABBIT AND ASSOCIATION WITH SNPS POLYMORPHISM OF ESR AND FSHB GENES. Zhang et al. (China)





TOPICS

1. EFFECT OF FREE L-CARNITINE ADDED TO MATURATION MEDIUM ON IN VITRO MATURATION, FERTILIZATION AND CULTURE OF RABBIT OOCYTES. El-Ratel et al. (Egypt)
2. EFFECT OF PHOTOSTIMULATION, LIGHT SOURCE AND SEASON ON REPRODUCTIVE PERFORMANCE OF RABBIT DOES. Eiben et al. (Hungary)
3. EFFECT OF DIFFERENT NEST MATERIALS ON PERFORMANCE OF RABBIT DOES. Farkas et al. (Hungary)
4. GESTATION LENGTH, LITTER SIZE AT BIRTH AND THEIR EFFECTS ON GESTATION WEIGHT GAIN, KINDLING LOSS, LIVE BODY WEIGHT OF KIT AND SURVIVAL IN DOMESTIC RABBIT IN NIGERIA. Fayeye et al. (Nigeria)
5. PREGNANCY DIAGNOSIS: A NEW, NON-INVASIVE METHOD TO ESTIMATE THE PROLIFICACY POTENTIAL DURING RABBIT GESTATION. Robert et al. (France)
6. INFERTILITY OF FEMALE RABBITS ON COMMERCIAL UNITS. Rosell et al. (Spain)
7. EFFECT OF LITTER SIZE AT BIRTH AND OF NUMBER OF SUCKLED KITS, ON THE MILK PRODUCTION IN TWO GENOTYPES OF RABBIT DOES RAISED IN ALGERIA. Zerrouki-Daoudi et al. (Algeria)





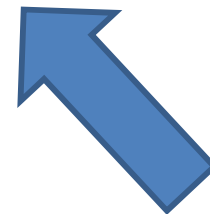
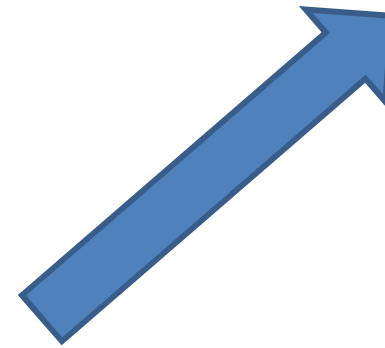
TOPICS

1. A POTENTIAL ROLE FOR COENZYME Q10 AS ENERGY AND ANTIOXIDANT AGENT IN EMBRYO PRODUCTION FROM FOLLICULAR OOCYTES IN RABBITS. Abdel-Khalek et al. (Egypt)
2. CHARACTERIZATION OF THE PROTEIN FRACTION OF MILK PRODUCED BY TWO GENETIC TYPES OF RABBITS IN THE REGION OF TIZI-OUZOU. Amroun et al. (Algeria)
3. EFFECT OF A PLANT EXTRACT ON RABBIT EMBRYONIC VIABILITY. Bebin et al. (France)
4. ORAL ADMINISTRATION OF N-3 POLYUNSATURATED FATTY ACIDS AND RABBIT REPRODUCTIVE PARAMETERS Felipe-Pérez et al. (Mexico)
5. PREIMPLANTATIONAL STUDY IN RABBIT DOES SUPPLEMENTED WITH N-3 POLYUNSATURATED FATTY ACIDS. Rodríguez et al. (Spain)
6. FETOPLACENTAL AND ORGAN DEVELOPMENT IN FOETUSES OF RABBIT DOES SUPPLEMENTED WITH N-3 PUFA DURING PREGNANCY. Rodríguez et al. (Spain)

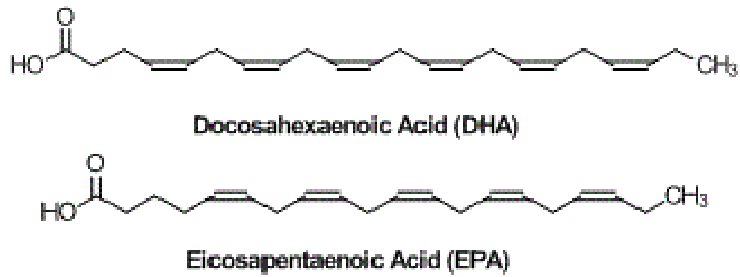


The body state and nutritional factors strongly affect the repro processes and many physiological mechanisms are activated to inhibit the reproductive activity when the body's energy reserves diminish.

Natural and physiologic remedies

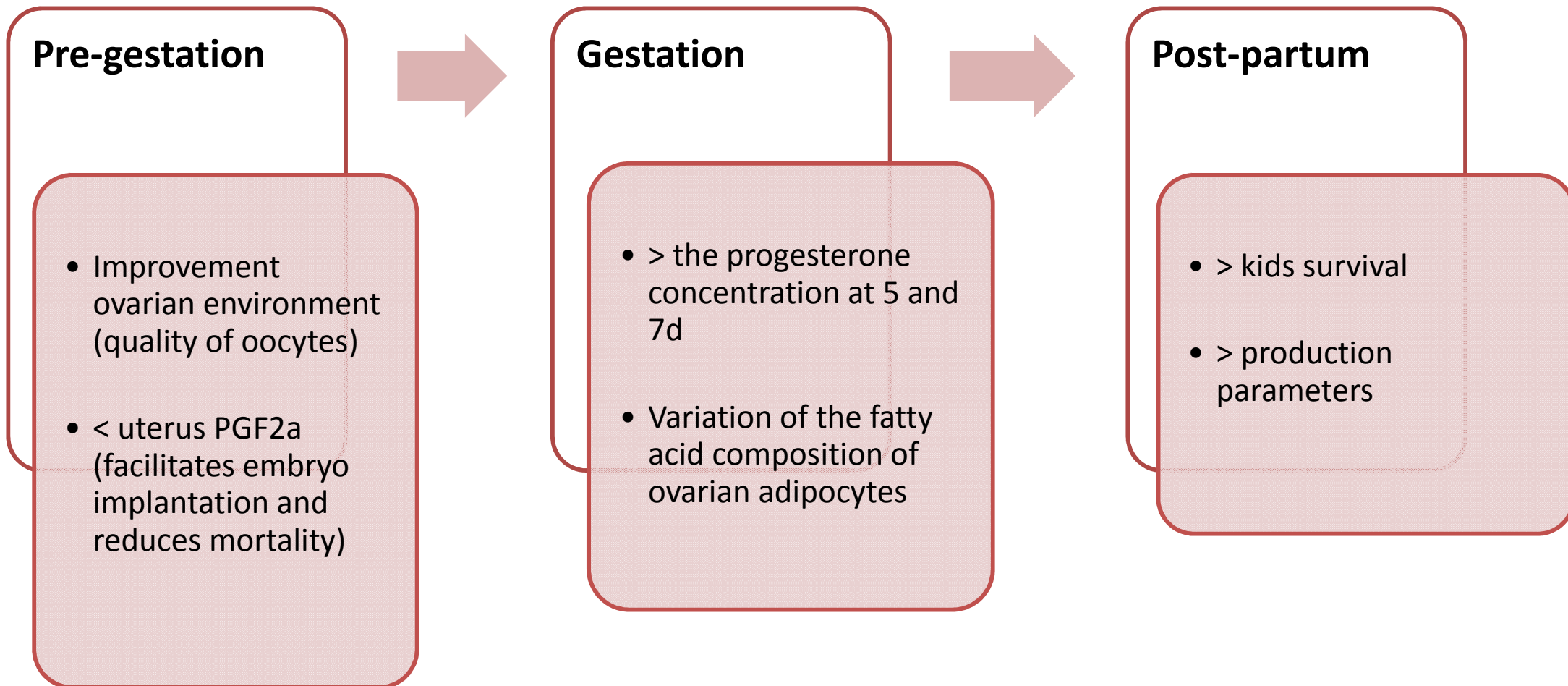


**Dietary supplementation of
EPA e DHA**



(Wathes *et al.*, 2007)

- < sphingomyelins and cellular cholesterol;
- alter the signal protein (receptor domains);
- affect the hormone biosynthesis (prostaglandin, estradiol, progesterone).



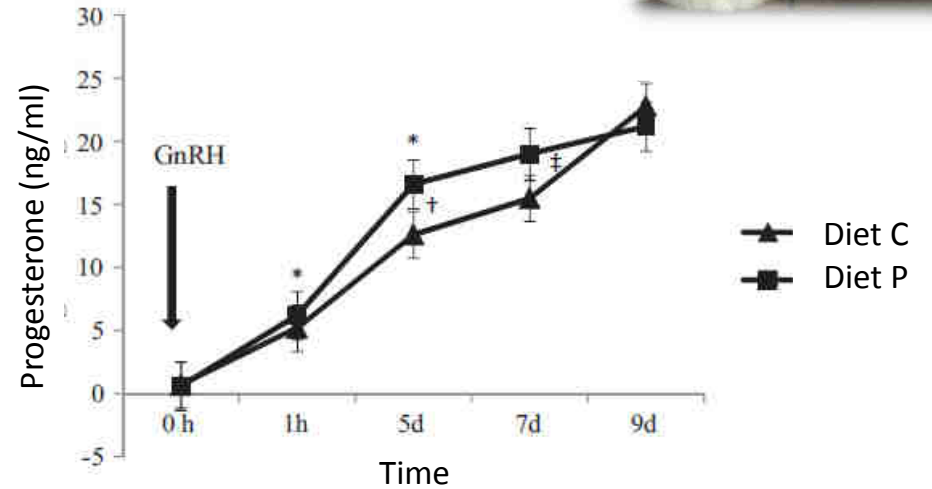
(reviewed by Coyne *et al.*, 2008)

Salmon oil (EPA and DHA) in pregnant rabbit does



7.5 g/kg

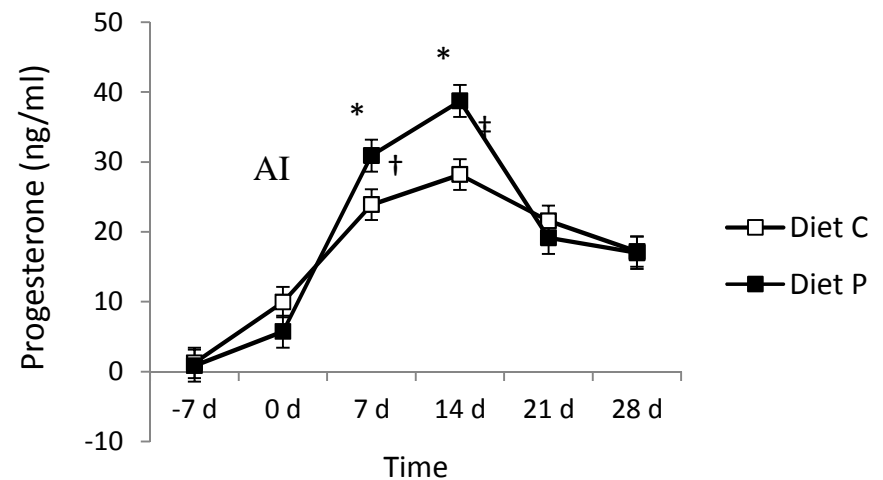
Δ [Progesterone] at Day 5 and 7 post-ovulation (preimplantational period)



(Rebollar *et al.*, 2014)

30 g/kg

Δ [Progesterone] at Day 7 and 14 post-ovulation (post implantational period)



(Febrel *et al.*, 2015)

ORAL ADMINISTRATION OF N-3 POLYUNSATURATED FATTY ACIDS AND RABBIT REPRODUCTIVE PARAMETERS

Felipe-Pérez Y.E., García-Dalmán C., Gaytán-Mancilla F., López-Rodríguez J.L., Cano-Torres R., Pescador-Salas N.

Aim

dietary PUFA n-3 and reproductive performance (sperm quality, reproductive rate, number of births, gestation length, pre-weaning mortality)

M&M

10 Californian x New Zealand males

10 New Zealand does (multiparous)

10F: n-3 PUFAS (n-3) oral administration

10F: control (-)

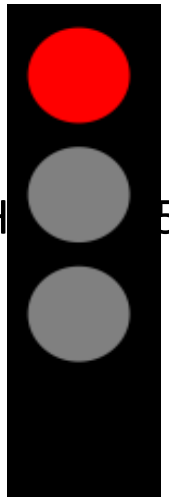
Results

0.5 g/kg

NO effect on the reproductive capacity

360 mg/capsule EPA + 240mg/capsule DHA

Multiparous does



FETOPLACENTAL AND ORGAN DEVELOPMENT IN FOETUSES OF RABBIT DOES SUPPLEMENTED WITH N-3 PUFA DURING PREGNANCY

Rodríguez M. , López-Tello J., Arias-Álvarez M., García-García R.M., Formoso-Rafferty N., Lorenzo P.L., Rebollar P.G.

PREIMPLANTATIONAL STUDY IN RABBIT DOES SUPPLEMENTED WITH N-3 POLYUNSATURATED FATTY ACIDS

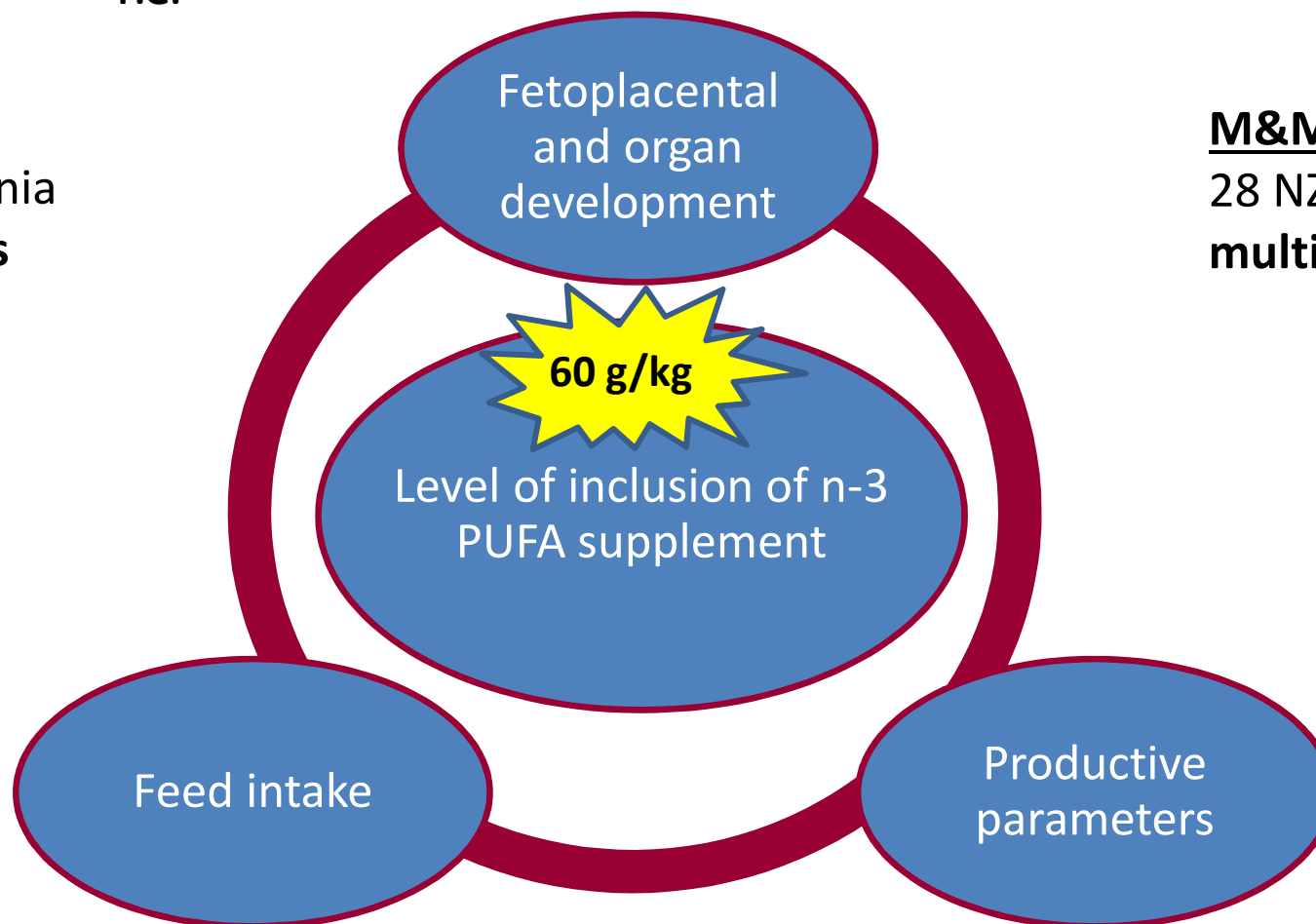
Rodríguez M.1, Febrel N., López-Tello J., García-García R.M., Arias-Álvarez M., Millán P., Formoso-Rafferty N., Lorenzo P.L., Rebollar P.G.

M&M

74 NZWx California nulliparous does

M&M

28 NZWx California multiparous does



M&M

1 and 2 exp



Standard diet:

2400 kcal DE/kg, 36% NDF, 16% CP

Diet C (Control)

**3% Mixed fat
(lard and tallow)**

Diet P (n-3 PUFA)

6% Optomega50

Salmon oil

50% EE rich in n-3 PUFA:

13% DHA (C22:6 n-3)

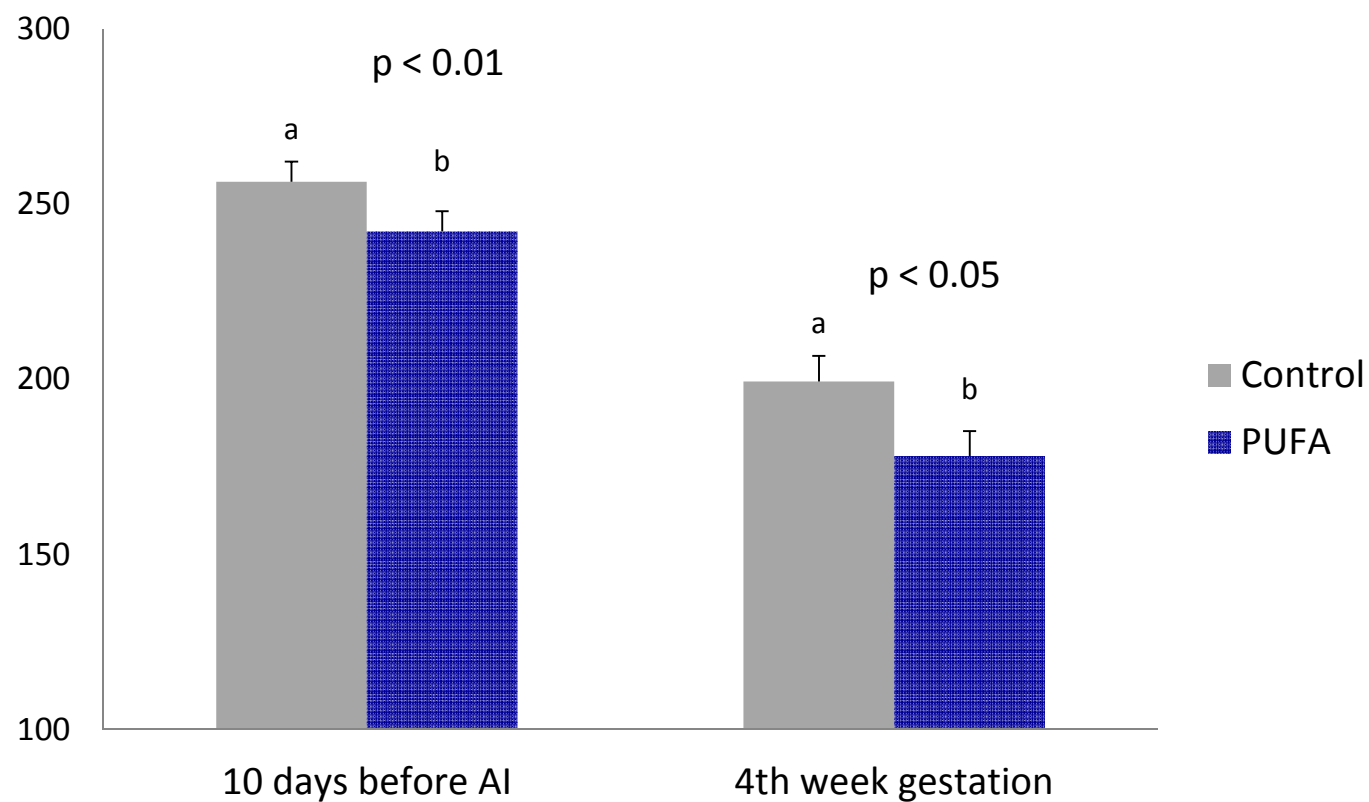
3% DPA (C22:5 n-3)

7% EPA (C20:5 n-3)

7% SDA (C18:4 n-3)

3% ALA (C18:3 n-3)

FEED INTAKE (g/d)



Good strategy to reduce cost of production for farmers

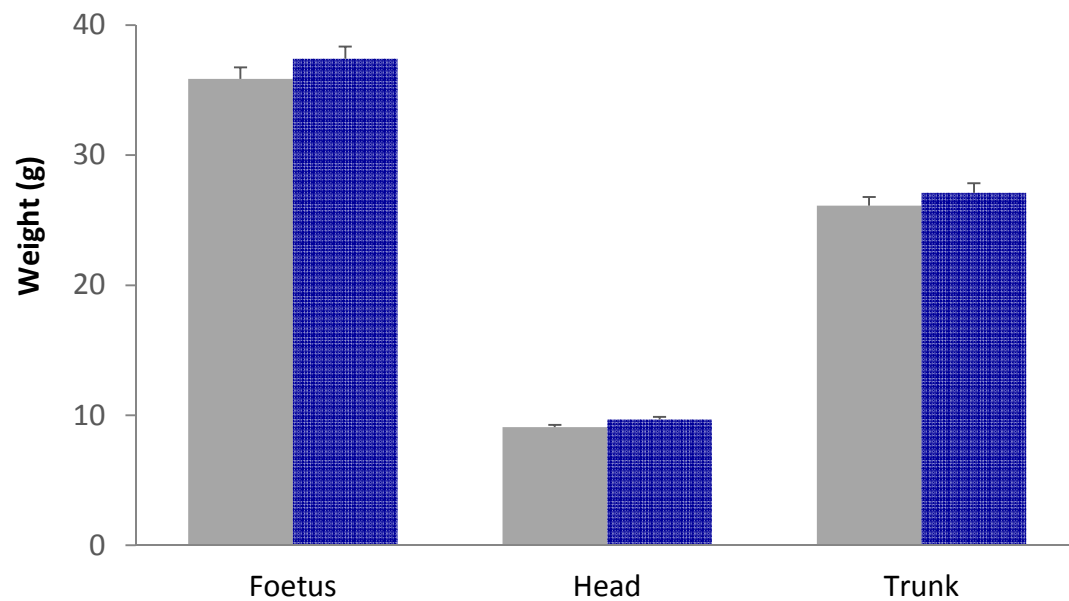
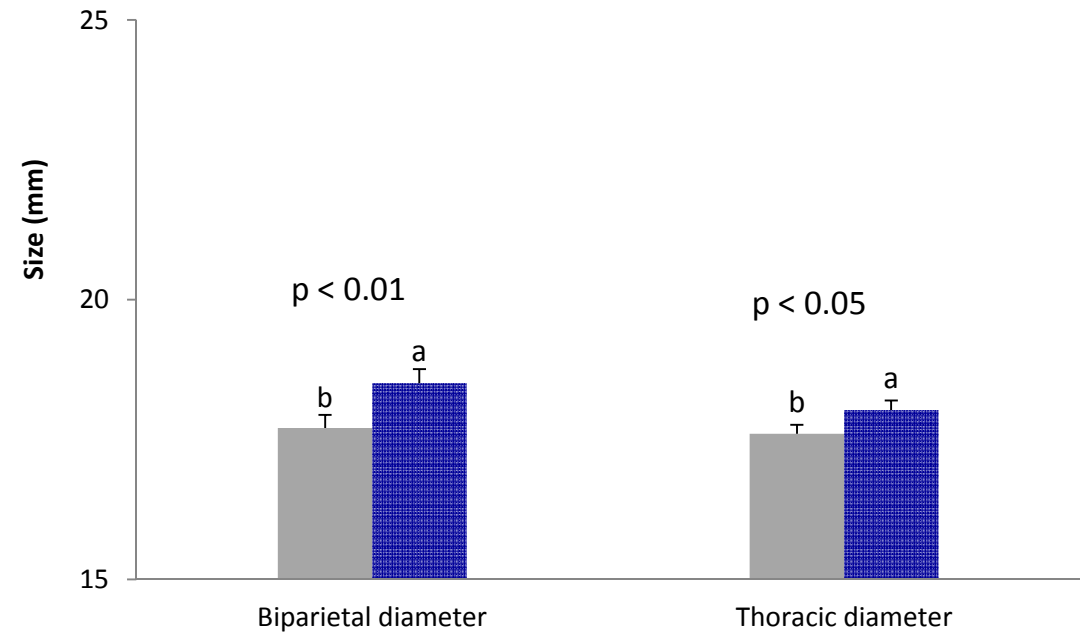
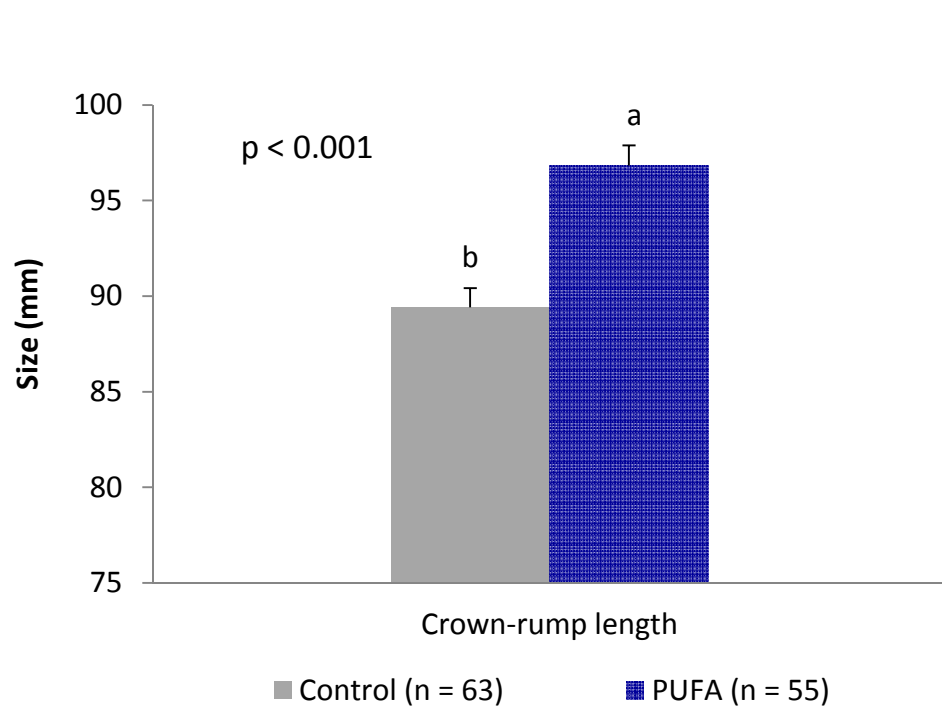
Results 1exp

FETOPLACENTAL DEVELOPMENT

	Control	PUFA	P>f
No. of foetuses	63	55	
Placenta weight (g) ←	4.96 ± 0.131	5.18 ± 0.141	n.s.
Labyrinth			
Weight (g) ←	3.43 ± 0.101	3.43 ± 0.109	n.s.
Thickness (mm)	3.21 ± 0.178	4.60 ± 0.191	***
Decidua			
Weight (g)	1.37 ± 0.041	1.56 ± 0.044	*
Thickness (mm)	2.71 ± 0.101	3.61 ± 0.107	***
Foetal weight : Labyrinth weight Ratio	10.62 ± 0.208	11.16 ± 0.223	†

***: p<0.01; *: p<0.05; †: p<0.1

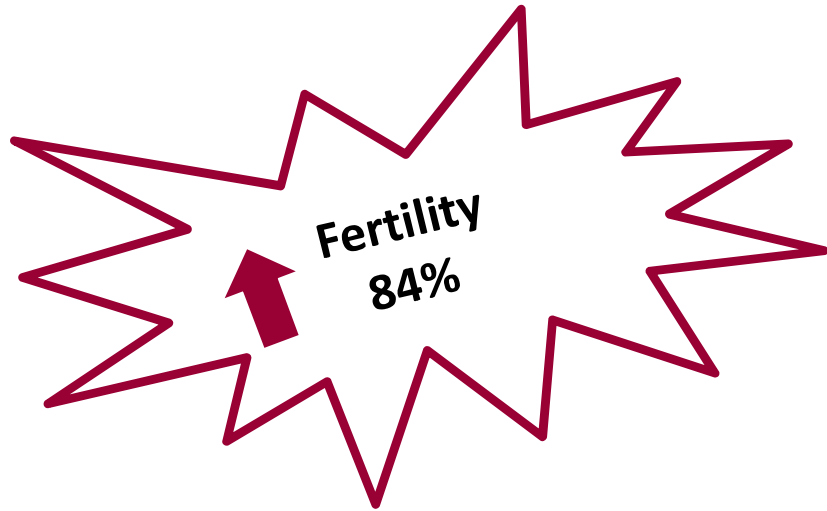
FETOPLACENTAL DEVELOPMENT



ORGANS DEVELOPMENT

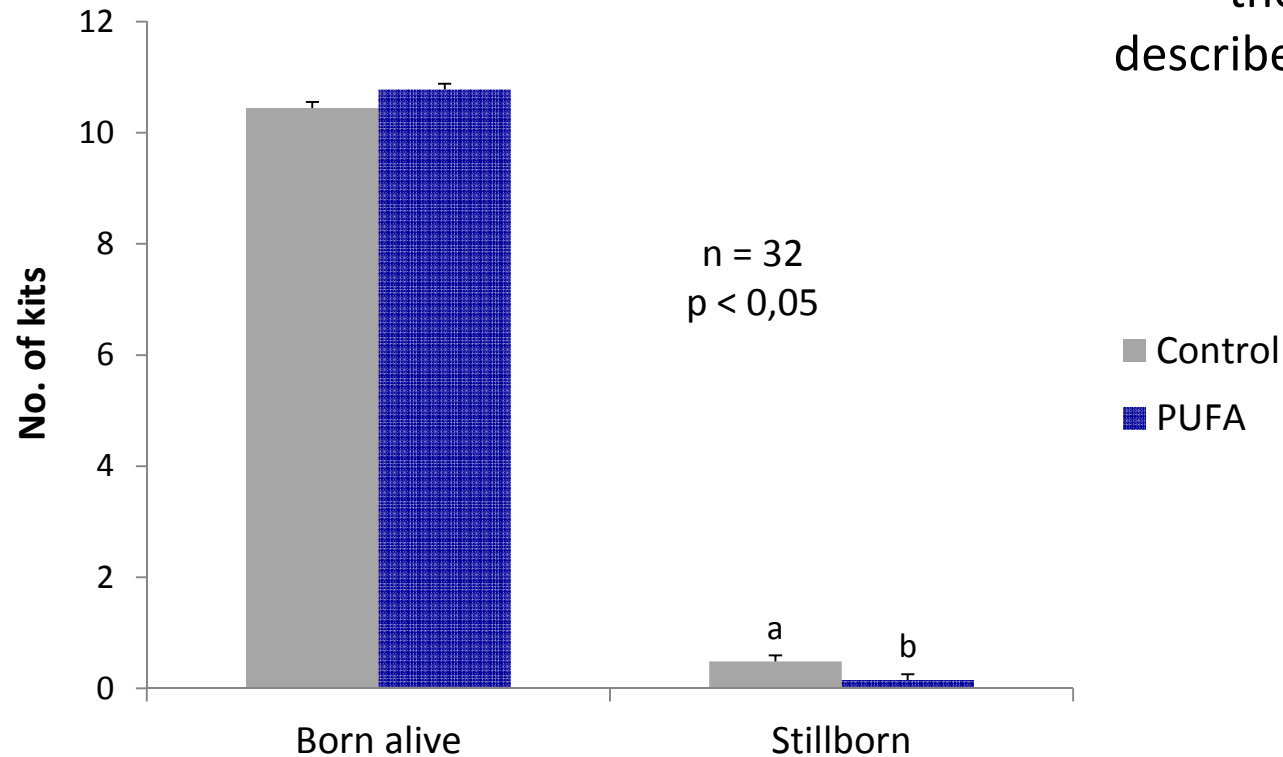
NO differences between diets
on main organs

PRODUCTIVE PARAMETERS



Nulliparous does

These results align with the ones previously described by (Rebollar *et al.*, 2014)



OVARIAN AND EMBRYO PARAMETERS

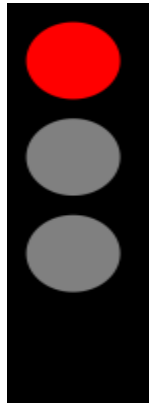
	C	P	SE	P<f
n. does	14	14		
Ovulated does	14	14		
Ovulation rate (n. CL/ ovulated doe)	13.07	11.86	1.243	0.4959
Fertility (%)	78.6	64.3		0.4216
Recovery rate (%)	55.9	83.8	9.038	0.0410
Morula (%)		6	10.688	0.2107
Blastocyst (n)			6.318	0.0905
Retarded embryos (n)			10.283	0.8054

Multiparous does

PROGESTERONE

at 84 h post-AI (3.4 ± 0.31 ng/ml)
no differences

Results 1st exp



Ovulation rate

Number of viable foetuses on Day 28 of pregnancy

Fertility (nulliparous)

Lower feed intake of the PUFA group

Better results on fetoplacental development

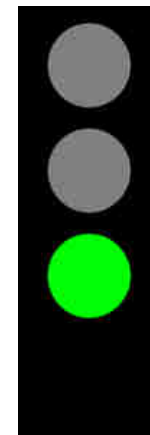
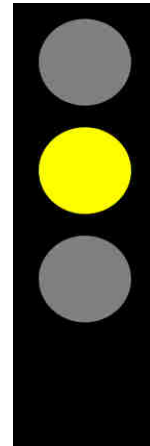
More born alive and less stillborn in the PUFA group

Results 2nd exp



Fertility (multiparous)

Embryo recovery rate



Conclusions

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Felipe-Pérez Y.E., García-Dalmán C., Gaytán-Mancilla F., López-Rodríguez J.L., Cano-Torres R., Pescador-Salas N.

90 mg EPA + 60 mg DHA daily - 50 days

PARITY ORDER

630 mg EPA + 1170 mg DHA daily - 28 days

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THANKS FOR
ATTENTION

