



## Effect of MT.X+ on ZEA and DON in swine Spain (2008)

### TRIAL DESCRIPTION:

**Objective:** to evaluate the efficacy of MT.X+ to adsorb zearalenone (ZEA) and deoxynivalenol (DON).

**Experimental facilities:** the trial was conducted by Agrotest Control, an independent research company in Zaragoza, Spain.

**Background:**

- The original aim of the trial was to measure the efficacy of MT.X+ to adsorb ZEA. Male and female piglets between 4 and 12 weeks of life were used as this is the period where blood content of estrogens is lower. However high variability was observed in the weight, therefore it was decided to run a second trial using weaned females only.
- As it is more representative to use natural contamination, a contaminated gluten feed was used to produce the contaminated feed. As the feed analysis showed a contamination with DON, which was higher than ZEA, a more complete trial could be performed.

**Time of trial:** ① January, 9<sup>th</sup> – February, 26<sup>th</sup> 2008: study on males and females from 20 and 30 kg of live weight.  
 ② June, 2<sup>nd</sup> – July, 9<sup>th</sup> 2008: study on females only, weighing from 14 and 16 kg.

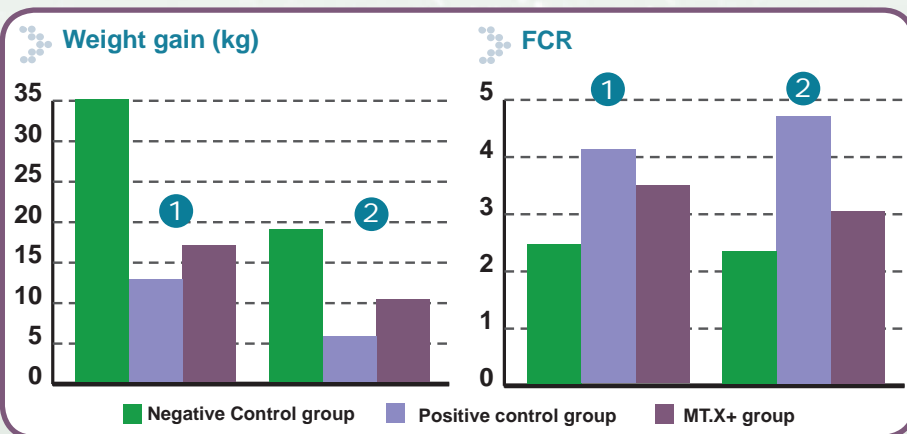
**Protocol:**

- Negative control group: commercial feed
- Positive control group: same commercial feed contaminated with 596 ppb of ZEA and 1560 ppb of DON.
- Experimental group: same feed as positive control group supplemented with MT.X+ at 2 kg/t of feed.

Blood samples were collected every week for every animal in the trial and estrogens and leucocytes levels were measured. Growth performance, reproductive and immune parameters were observed.

### RESULTS

#### Zootechnical performance

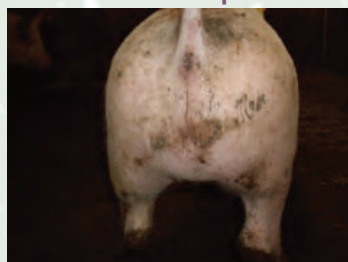


Pigs weight gain was affected by ZEA and DON contaminations. However, pigs from MT.X+ group gained more weight than pigs from positive control group. Feed Conversion Ratio (FCR) was also affected by mycotoxins contamination (+1,67pt in positive control group). Again, pigs in MT.X+ group had a better FCR than the positive control group, showing a good protection of the microvilli in the gut.

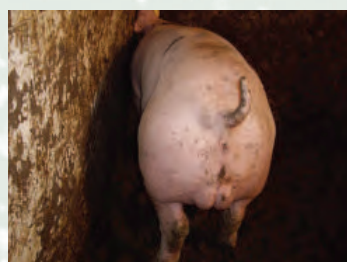
In spite of the high DON contamination of the diet, feed consumption remained very good in MT.X+ group (1,2 kg/animal/day).

#### Reproduction parameters:

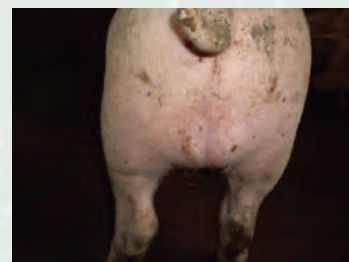
##### Testicular development



**Positive control**  
problems of development of the testicles



**Negative control**  
normal development of the testicles

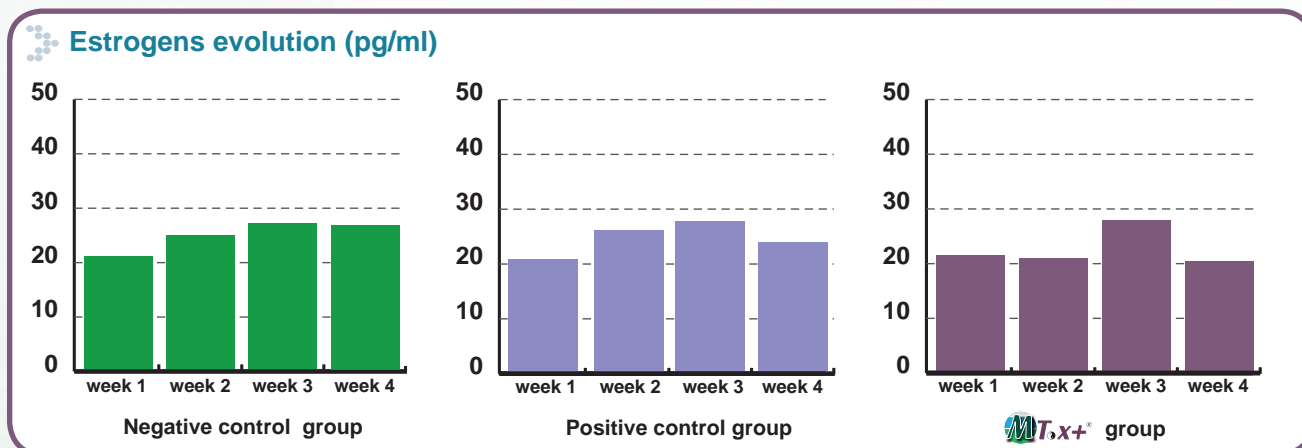


**MT.X+**  
better development of the testicles than positive control



### Estrogens level:

Estrogens levels followed the same evolution in the 3 groups. However negative control and MT.X+ groups presented lower and more stable levels than positive control group did.



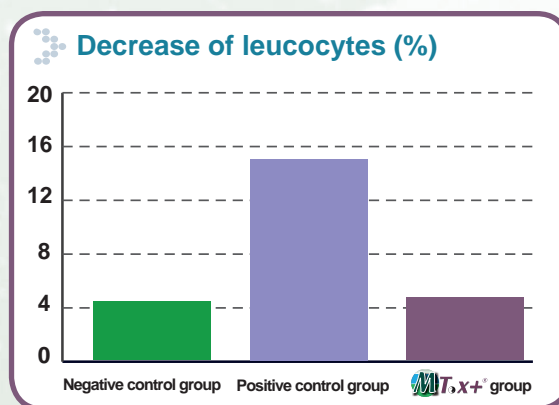
### Ovarian activity and uterus weight:

Ovarian activity was perturbed in positive control and experimental groups. Meanwhile, in spite of lower follicles size (< 6mm), gilts from MT.X+ group showed the most similar data than those from the negative control group on growing and mature follicles. Uterus weight values for MT.X+ group were also very similar to those in the negative control group.

### IMMUNITY PARAMETERS

When immune system is being challenged, the level of leucocytes in blood decreases. The chart shows the percentage of decrease of leucocytes level in blood between week 1 and week 4.

The positive control group presented a high decrease of leucocytes (15%) whereas negative control and MT.X+ groups presented lower percentages of decrease (<5%).



### CONCLUSION

MT.X+ showed good efficacy in binding ZEA and DON, reflected in several parameters:

- Weight gain, feed conversion rate and feed consumption were improved, showing a good protection against DON effects on the gut.
- Size of testicles, levels of estrogens in blood and uterus weight were similar to control group, showing a good protection against ZEA effects, both in males and females.
- Immune status was improved as shown by the level of leucocytes, proving a good protection against the effects of polycontamination on the immune system.

All these parameters prove the efficacy of MT.X+ on feed with high level of contamination.

**MT.X+ Improve protection, improve performance!**



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