**Supplementary material S1 (*animal* journal)**

**The effects of immunization against gonadotropin-releasing hormone on growth performance, reproductive activity and carcass traits of heavy weight gilts**

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**Appendix**

The code for all graphics was based on the **barplot** command contained in the **graphics** package, already installed in the R software root. In the **read.table** command contained in the **utils** package, we used "clipboard" to paste the tables directly from excel .

The code for ANOVA was based on the **lme** command contained in the **nlme** package. The data was read by read\_excel command contained in the readxl package. Both packages need to be installed previously.

*m1<-lme(variable1~fixed\_effect1, data=database, random=~1|random\_effect1)*

*anova(m1)*

The standard error mean was calculated as standard deviation divided by the square root of total sample size of the variable.

*sd(database$variable1)/(sqrt(length(database$variable1)))*

Chi-Square analysis was performed using the command **chisq.test** and **pchisq** from **stats** package, also installed in the root of software R, considering the number of gilts that expressed estrus in relation to the total gilts in each group.

*cio<-c(a=30\*100/36,b=0\*100/36)*

*Ei <- sum(cio)\*1/length(cio)*

*X2 <- sum((cio-Ei)^2/Ei)*

*nu <- length(cio)-1*

*pchisq(X2, df=nu, lower.tail=FALSE)->p*

*chisq.test(cio, correct = T)*

*sd(cio)/sqrt(length(cio))*