

Intestinal Microbiota of Farm monogastric animals bred with Innovative nutritional solutions

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Context

Weaning is a critical transition phase for health of farm monogastric animals and often requires antibiotic treatments. As an alternative, different nutritional solutions were evaluated for their effects on piglets digestive comfort and intestinal microbiota.

Materials & Methods

ANIMAL EXPERIMENT

Two consecutive rounds, comprising each 192 freshly weaned piglets received 6 different nutritional solutions (T2 to T7) or no solution (T1)

ZOOTECHNY

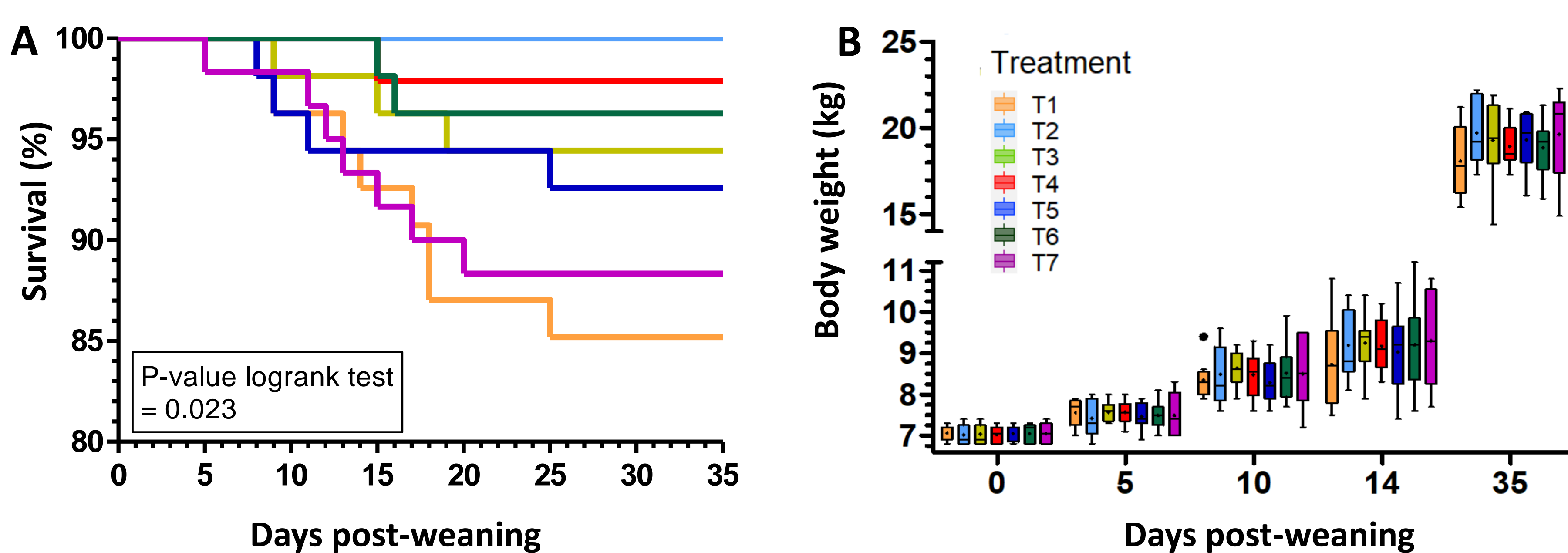
Body weight and mortality rate were recorded for all groups

TARGETED AMPLICON SEQUENCING

Fecal swabs were taken at arrival, day 14 and day 32. After DNA extraction, samples were processed through the *Metabiote® Solution* (16S rRNA sequencing on MiSeq Illumina) for characterization of bacterial communities

Treatment	Composition
T1	Basal diet (BD) (control)
T2	BD + Ca-butyrate
T3	BD + Tannins
T4	BD + Nutriose®
T5	BD + Ca-butyrate + Tannins
T6	BD + Tannins + Nutriose®
T7	BD + Ca-butyrate + Tannins + Nutriose®

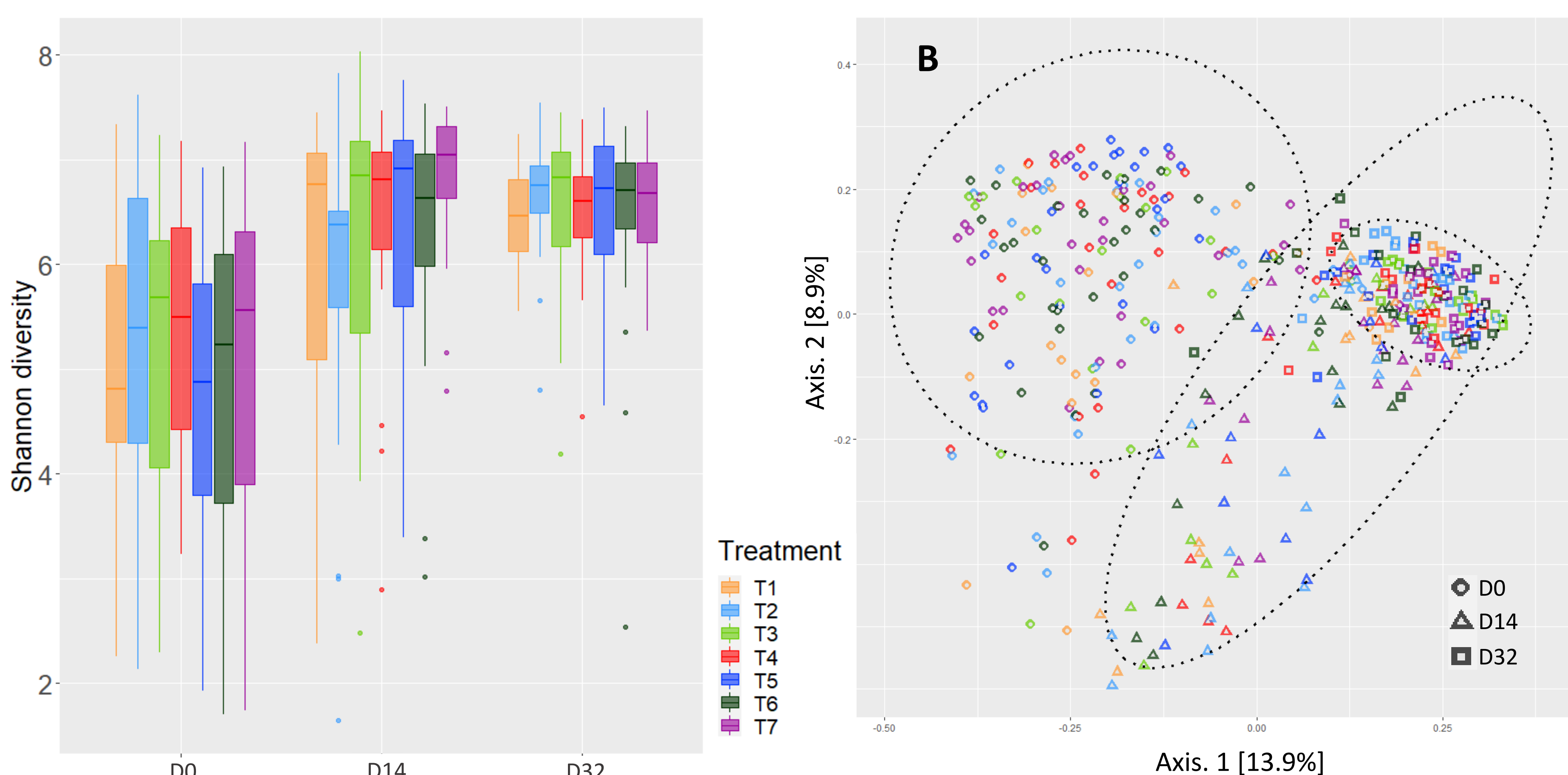
Zootechny results of survival rate (A) and body weight (B) during post-weaning



Results

- The control group (T1) showed the highest mortality rate (~15%) compared to groups bred with nutritional solutions
- Only group bred with Ca-butyrate (T2) presented no mortality
- Group bred with combination of Ca-butyrate, tannins and Nutriose® (T7) had the highest weight but also the highest mortality rates (~12%)

Alpha (A) and beta (Bray-Curtis) (B) diversity of intestinal microbiota for a subset of samples



- The increased bacterial diversity over time illustrated colonization of piglets intestines during the weaning
- The bacterial composition of intestinal microbiota tended to stabilize over time
- No strong distinction between treatment groups

Conclusion

These primary results confirmed that weaning is a crucial step for intestinal bacterial colonization. Further analyses will evaluate the benefits of the nutritional solutions tested.