

THIS ARTICLE IS PART OF THE SERIES – We bring light in the dark of „black powders“

Part 4/5: Overview scientific studies

In the following five contributions, we will explain the differences between humic substances, charcoal and clay minerals, which are often equated by their appearance. Parts 1, 2 and 3 have already described the development, extraction and modes of action of these substances. In this fourth part we will discuss their results in scientific studies.

Humic substances

Humic substances are an outgrowth of humification processes from organic material. The term humic substance covers a broad field of meanings and is often used interchangeably. Effects in animal nutrition are difficult to compare due to varying qualities and products as well as inadequate specifications.

For this reason, even scientific studies are difficult to classify. In pigs, WANG et al. (2008) show that daily gains and feed conversion were significantly increased by feeding humic substances. JI et al. (2006) found significantly improved gains and feed conversions only in individual feeding sections. In broilers, the use of simple humic substances had a significant effect on the feed intake. The other performance parameters did not differ (KARAOGLU et al., 2004). In the study by RATH et al. (2006), the daily weight gain and feed conversion of broilers were significantly reduced by the use of humic substances. The contradictory results may differ due to varied qualities of humic substances.

Clay minerals

A variety of clay minerals of different qualities are approved as component in animal nutrition. Accordingly, the classification is quite difficult. Scientific studies have shown that clay minerals can prevent diarrhea in weaned piglets (SONG et al., 2012, TRCKOVA et al., 2009, VONDRUSKOCA et al., 2010). Because of this, several attempts have been made to increase the willingness of pigs to perform by using different clay minerals. This could be demonstrated in piglets (TRCKOVA et al., 2009), however in the majority of the studies no performance increases could be confirmed (CHEN et al., 2005, PRVULOVIC et al., 2007, THACKER et al., 2003). →



Charcoal

Several studies have already been carried out about charcoal in pig and broiler feeding (CHU et al., 2013, JIYA et al., 2014, KANA et al., 2001, SUNG et al., 2006). The results were partly contradictory. Significant increases in performance have been occasionally made out. Often, however, no difference was noted. The comparability of the studies is difficult, as the charcoal used and the dosages differ.

WH67®

The product WH67® has been researched for more than 50 years and since then has been continuously developed and optimized. Numerous studies prove the effectiveness on the basis and practice level. A study by GERLACH et al. (2014), for example, shows that the use of WH67® has significantly better effects on minimizing *C. botulinum* than charcoal (see figure 1). BARTHMANN (2002) and LEIDEL (2016) showed significant increases in milk

yield and positive effects on the health of dairy cows. The investigation by LÜTKE-DÖRHOFF et al. (2017) shows that the feed addition of WH67® can significantly increase daily gains and feed intake in high-performing piglets in a good health status. Please find more information about this study here: <https://www.gites-gmbh.de/en/publication-humic-acids-in-animal-feed/>

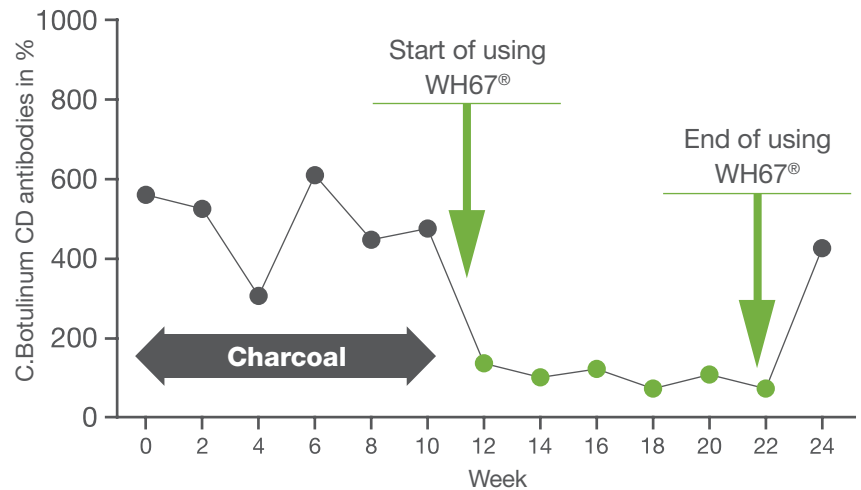


Figure 1: Effects of WH67® and biochar on the inhibition of *C. botulinum* (GERLACH et al., 2014)

Conclusion

Scientific studies show that the use of humic substances, clay minerals and charcoal in animal nutrition can have positive and occasionally also negative effects on various parameters. However, the results are not always comparable and sometimes contradictory. It comes out that the success of a product depends very much on its standardization and quality. If this does not happen, even negative effects can occur. Our product WH67® is a fully standardized product that has been researched and developed for more than 50 years and has been proven to increase animal performance and vitality.



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