CHR. HANSEN
Improving food & health

BIOPLUS® YC
FLEXIBILITY you demand

High ingredient prices and variation in feed ingredient availability make formulating diets a challenge.

Today's swine nutritionists must be agile and flexible when formulating diets. Market volatility, draught and legislation forces them to think "out of the box". On top of that many diets for pigs today contain several feed additives, which need to be compatible, heat resistant and able to survive under harsh conditions.

Backed with more than 40 years of data, **BIOPLUS® YC** is an effective probiotic that continues to harness the power of two *Bacillus* strains (*Bacillus subtillis* and *Bacillus licheniformis*) bringing consistent, reliable results in swine performance.

The consistent quality of **BIOPLUS® YC** and ease of use allows overcoming feed fluctuations.

BIOPLUS® YC, provides you with operational flexibility.

INGREDIENT APPROACH

Formulating diets is an art. High ingredient pricing, ingredient availability, and ingredient quality add to the everyday complexity of nutrient delivery management. The *Bacillus* organisms of **BIOPLUS® YC** produce enzymes while in their vegetative state to acquire needed nutrients for survival. The pig benefits from this probiotic activity as varied pools of nutrients are made available.

The **BIOPLUS® YC** ingredient approach allows for additional flexibility when optimal ingredients are not available, and it ensures daily forgiveness when nutritional values between sources of feed ingredients fluctuate through a consistent increase in nutrient availability. Results from our Energy Release *in vitro* assay demonstrate how energy released from different sources of soyabean meal varies to great extent. The addition of **BIOPLUS® YC** can help to achieve the total energy release potential of a given soyabean meal source (Figure 1).

COMPATIBILITY WITH OTHER FEED ADDITIVES

In today's pig diets, many additives are used, highlighting the importance of compatibility between additives. The use of incompatible or not stable feed additives adds to the complexity when formulating diets.

BIOPLUS® YC is compatible with other additives (Figure 2, next page).

Figure 1. Energy released (kcal/kg) in different sources of soyabean meal (SBM) (grey) and additional energy released by **BIOPLUS® YC** compared to control (bordeaux).

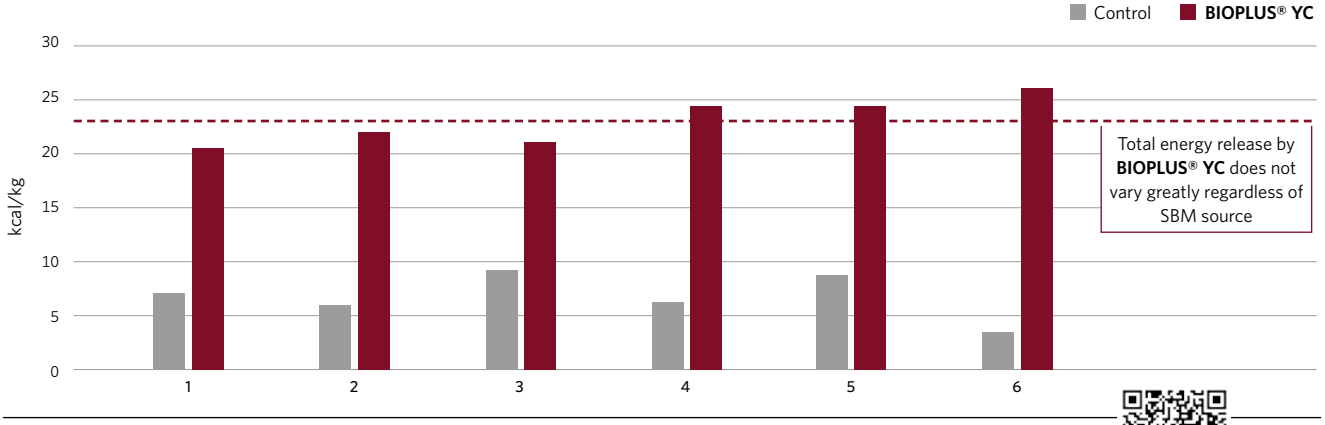

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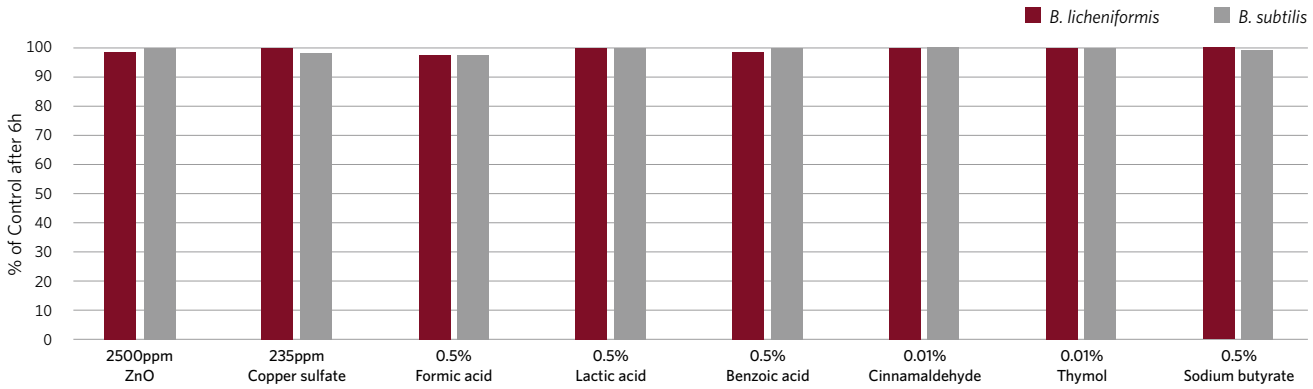
Figure 2. Compatibility of the strains in **BIOPLUS® YC** with other feed additives in commonly used concentrations.



CONSISTENT QUALITY

At Chr. Hansen we know that consistent results start with consistent quality.

We take pride in delivering consistent high-quality additives to ensure consistent results for our customers. Our production facilities are FAMI-QS and ISO 22000 certified, and every produced batch undergo a thorough quality procedure before being distributed to our customers.

We assure:

- **Consistent Identity** - Always the right bacteria in the right bag
- **Consistent Purity** - Only the right bacteria in the bag
- **Consistent Quantity** - The right number of bacteria – always
- **Consistent Flow and Mixability** - The right bacteria flow and mix well
- **Consistent Viability** - The right bacteria are viable and ready for action

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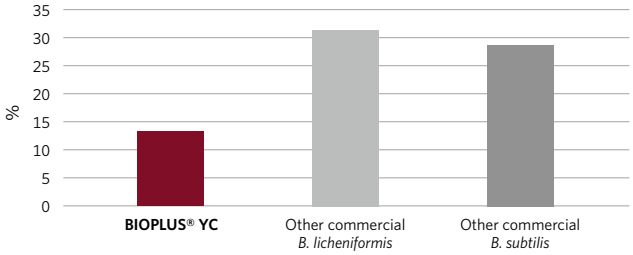
ENSURED FLOWABILITY

One of the key metrics in easy handling of a feed additive is flowability. A way to define flowability is by using the CARR-index. This index measures the compressibility of the feed additive, a measure that can be linked to flowability (Table 1). The lower the compressibility value, the greater flowability. Figure 3 shows the CARR-index values for **BIOPLUS® YC** compared to other commercial probiotic strains.

Table 1. Relationship between powder flowability and % compressibility

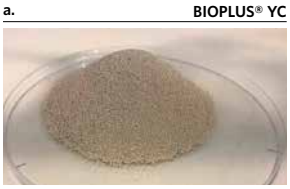
Flow description	% Compressibility
Excellent flow	5 - 15
Good	16 - 18
Fair	19 - 21
Poor	22 - 35
Very Poor	36 - 40
Extremely Poor	> 40

Figure 3. CARR-index values of **BIOPLUS® YC** and two commercially available probiotic strains.



Excellent flowability of **BIOPLUS® YC** makes for easy handling and homogeneity of in feed distribution (Figure 4a-c).

Figure 4a-c. Physical appearance of commercial available *Bacillus*-based probiotics after passing through a funnel in a flowability measurement setup.



We know that for the feed producers it is key to deliver a diet that meet nutritional requirements and assures stable and predictable results.

The flowability and quality aspects are relevant for feed millers to assure homogeneity and deliver high quality feed for high performance of the animals.

The **BIOPLUS® YC** legacy of quality combined with ease of use and application allows your operation seamless navigation of industry-wide feeding practices.

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