

# Direct Fed Microbials for Poultry - 5 Key Attributes.

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- 1. Mode of action understood and explained.**
- 2. Heat stable for storage and through pelleting.**
- 3. Reliable in vivo performance data. Not just laboratory trials.**
- 4. Multi strain that has broad spectrum activity against pathogenic bacteria.**
- 5. Safe and non-pathogenic itself.**

## **Direct Fed Microbials- background**

Firstly, let's define what is meant by a direct fed microbial or DFM as they are commonly referred to. A DFM is a product that contains live and viable microorganisms such as yeast or bacteria that is most commonly provided in the feed of poultry. DFMs are also referred to as probiotics. Whichever the term used, DFM or probiotic, their role in poultry production is to provide live microorganisms to the bird in sufficient amounts to confer a health benefit on the host.

Many people do not realise that birds at hatch have an immature mucosal immune system and that the gastrointestinal tract does not contain a mature microbiome. It is during this time that the bird is increasingly susceptible to imbalanced microbial populations. If left alone, the gastrointestinal tract is colonised by environmental bacteria, which could be good or bad depending on the type of bacteria in the environment. Therefore, by providing birds with beneficial bacteria (a DFM), these bacteria can colonise the gastrointestinal tract and ward off pathogenic bacteria. Two major types of DFMS are currently used in poultry; lactic acid bacteria and endospore forming bacteria. Endospore forming bacteria are favoured as they are more resilient to the feed manufacturing process (more on that later).

## **How do Direct Fed Microbials work?**

Probiotics or DFMs work by providing large numbers of beneficial bacteria to the host that can occupy adhesion sites in the gastrointestinal tract and thereby preventing the colonisation of non-beneficial populations. The beneficial bacteria are also able to compete with other bacterial species for nutrients as well as produce anti-microbial compounds which directly inhibit the growth of harmful bacteria within the gastrointestinal tract.

So, what are the key attributes of a DFM that should be considered and what makes a good probiotic?

## **Direct Fed Microbials must be able to be administered in adequate amounts and reach the target site of the gastrointestinal tract.**

It sounds obvious, however, in order to have a beneficial effect on the host, the probiotic bacteria must reach the proper site in the small intestine as well as arrive in sufficient numbers to have a positive effect. The most challenging step for DFMs is the feed

pelleting stage whereby the combined effects of heat, steam, moisture and pressure all may reduce the survival of the probiotic. Not all DFMs are created equal in their ability to withstand the feed manufacturing process and it is important to have data to support the aforementioned. If in doubt, ask your supplier for this information.

### **A Direct Fed Microbial must provide proven benefits**

As the poultry industry embraces reduced medication usage, this has given rise to increased interest in probiotics and beneficial claims. However, not all claims made by probiotic manufacturers have been proven in-field and rely either on lab data (i.e. in-vitro) or small numbers of birds. Not all probiotic strains are equal and not all probiotic strains have the same effect. When selecting a DFM to use in poultry, it is best to select a probiotic that has broad spectrum activity against several pathogenic organisms and not one that has been developed for a single target. A probiotic with a single target may be effective at reducing that specific bacteria but may also allow other non-beneficial bacteria to proliferate. Again, proven data is required and should be provided by your probiotic supplier.

### **What else should a Direct Fed Microbial have?**

The probiotic must be considered safe for the host, be non-pathogenic itself, produce an array of inhibitory compounds as well as have demonstrated positive influence over microbial populations within the gastrointestinal tract.

### **Benefits of Direct Fed Microbials**

Beyond their ability to support a healthy microbiome, high-quality probiotics have been shown to support the immune system, increase liveability, improve feed efficiency, reduce condemnations as well as reduce the prevalence of food borne pathogens such as salmonella.

By selecting a DFM that possesses the attributes described above, you are ensuring the opportunity to optimise the microbiome of the gastrointestinal tract to support improved performance and health outcomes. For what its worth we have worked with **Enviva Pro** from DuPont and for us it fills all the key criteria I've outlined in this document.

If you wish further information, please do not hesitate to contact me:

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