

## LactiproNXT® and LactiproFLX® FAQs

- **What is *Megasphaera elsdenii*?**

*Megasphaera elsdenii* is an anaerobic bacterium that naturally occurs in the rumen. The strain NCIMB 41125 is patented by MS Biotec and was selected because it is a highly effective, versatile and robust strain of *Megasphaera elsdenii*. NCIMB 41125 grows well over a wide pH range and is a potent lactic acid utilizer that enables regulation of rumen pH and contributes to the development and maintenance of a healthy rumen and rumen environment.

- **Why do LactiproNXT and LactiproFLX have to be refrigerated?**

If *Megasphaera eldenii* is exposed to oxygen, the bacteria die. Our production process is proprietary, and MS Biotec and its affiliates are the only manufacturers in the world that can produce viable anaerobic bacteria on a large commercial scale.

MS Biotec's 2<sup>nd</sup> generation product known as Lactipro *advance* did not require refrigeration due to its short shelf life of 14 days from the date of manufacture. The short shelf life resulted in waste at both the MS Biotec production facility and at the customer location.

MS Biotec has spent 7 years developing production and quality control processes to transform Lactipro *advance* into LactiproNXT (drench formulation) and LactiproFLX (capsule formulation). This 3<sup>rd</sup> generation product is freeze-dried and offers 12-month shelf life from the time of manufacture. Refrigeration maintains the viability of freeze-dried *Mega e*®.

- **How does freeze drying impact *Mega e*?**

MS Biotec has developed a proprietary process to transform the bacterial culture into a stable, freeze-dried form. In this form, *Mega e* is alive, but in a dormant state. Bacterial growth resumes when the freeze-dried product is rehydrated before administration with the drench formulation and in the rumen with the capsule formulation. Freeze drying does not harm or slow the bacteria's ability to replicate.

- **Do LactiproNXT and LactiproFLX perform the same as Lactipro *advance*?**

LactiproNXT and LactiproFLX have undergone extensive testing to ensure the bacteria's capacity to utilize lactate is unchanged from Lactipro *advance*.

Lactate utilization is characterized *in vitro* by inoculating a lactate growth medium with bacteria and monitoring bacterial growth. The growth characteristics of *Mega e* are understood and well-documented. Testing on LactiproNXT and LactiproFLX demonstrate bacterial growth is the same for all 3 products, providing assurance the freeze-dried bacteria will perform the same as the bacteria contained in Lactipro *advance*.

*In vivo* testing in feedlot steers demonstrated that lactic acid utilization capacity of the rumen was not different between freeze-dried, rehydrated *Mega e* and Lactipro *advance*.

- **How are LactiproNXT and LactiproFLX shipped?**

At our facility, LactiproNXT and LactiproFLX are stored in the refrigerator at 40°F ± 4°. Both products are shipped to customers in specially designed, insulated shipping boxes to reach the customer within 5 days. During summer months, MS Biotec will include an ice brick in large shippers of LactiproFLX if transit time exceeds 3 days. Data from shipping tests demonstrate no negative impact on *Mega e* cell viability when Lactipro is shipped per guidelines, placed in the refrigerator upon arrival and consistently stored at 40°F. If product is in transit for more than 5 days, please contact customer service immediately.

## **LactiproFLX**

- **How should LactiproFLX be handled when removing it from refrigeration?**

Each LactiproFLX capsule is individually sealed in foil. Open the LactiproFLX zipper pouch and remove the number of foil-sealed capsules needed. Place them in a cooler with an ice pack. Open the foil-sealed capsules only as needed at the time of administration. If any capsules are left after working cattle, place them back in cold storage and use these capsules first next time.

- **What should I do if LactiproFLX capsules get wet?**

The capsules should be kept in their individual foil packaging until application to the animal. If opened capsules get wet, they must be discarded. Please contact MS Biotec customer service for assistance.