



PROBIOTIC 7-IN-1

Probiotic 7-in-1 has been specially formulated for Biomed and is a shelf-stable product. This means that unlike some probiotics it does not need to be refrigerated to retain its functionality. Our ability to be able to offer a shelf-stable probiotic is due to relatively recent developments in probiotic technology. To assist you in understanding how this is achievable and provide evidence of test results of its effectiveness, the following information from Institut Rosell is provided.

Shelf Stability

Since probiotics are live products, their production requires great expertise. Unlike inert compounds such as herbs or chemicals, bacteria must be handled at every level with expert care in order to guarantee their survival and biological activity. Institut Rosell, Lallemand's Human Nutrition and Health division, has over 60 years experience and proprietary knowledge in doing just this.

Freeze-dried probiotic bacteria are sensitive to moisture, elevated temperatures, oxygen and other physical and chemical stresses all of which limit their shelf-life at room temperature and require them to be refrigerated in order to maintain their activity. However, Institut Rosell, a pioneer in probiotics, has developed a process for shelf stability and has been supplying the market for several years now.

This process dramatically enhances the survival rate of probiotic bacteria, now allowing room temperature storage for extended periods of time - up to 2 years for certain strains.

PROCESS DESCRIPTION

Through years of experience, Institut Rosell has determined that many factors must be carefully controlled in order to create shelf stability:

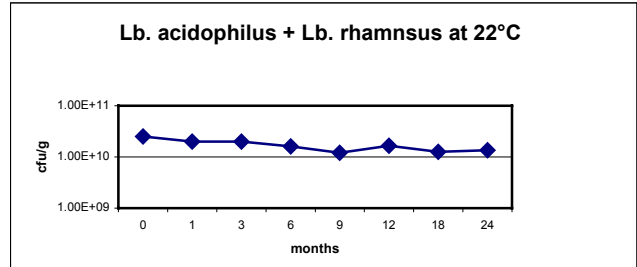
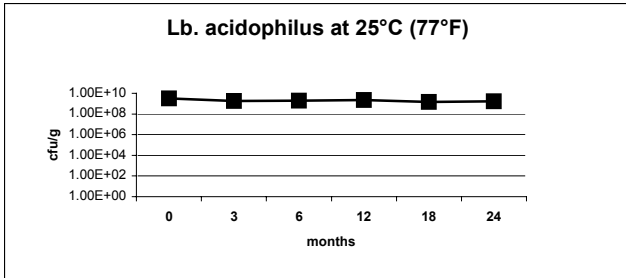
- **Strain selection**
- **Optimum culture conditions**
- **Proprietary harvesting and freeze-drying processes**
- **Defined manufacturing conditions**
- **Stringent selection and treatment of compatible excipients (including FOS, enzymes)**
- **Rigorously controlled packaging conditions**
- **Specified quality packaging**

Every strain and formulation offers their own challenges and Institut Rosell treats each one individually, seeking the optimum fermentation and lyophilizing conditions, and the most compatible excipients.

Proper handling of the probiotic bacteria from the fermentation phase to the point of sale is essential for extended shelf life. While temperature is a key element to control, such as avoiding heat shock during transportation, Institut Rosell has recognized that humidity and oxygen levels, physical and chemical stresses also affect probiotics and need to be properly managed in order to obtain long-term stability at room temperature. Institut Rosell will work closely with clients, assuring them that they are delivered the best quality product.

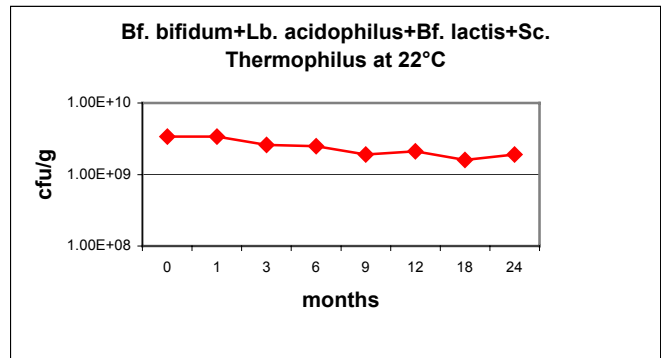
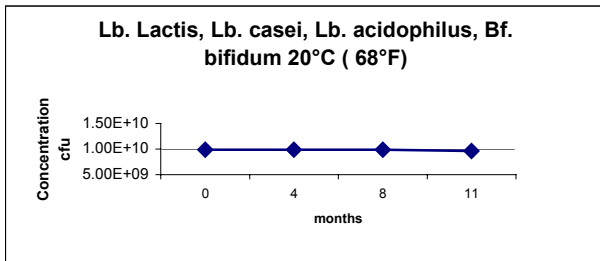
Shelf-stability tests done on *Lactobacillus acidophilus* powder at room temperature show that after 24 months the probiotic stability is at 55% with the treated *Lb. acidophilus* as compared to complete bacteria loss with the controlled *Lb. acidophilus* after 12 months.

The shelf-stability of the 400 mg capsules of the *Lb. acidophilus* and *Lb. rhamnosus* blend at 22°C in a glass container showed a viability of 54% after 2 years.



Shelf-stability tests done on one of our blends in capsules (*Lb. lactis*, *Lb. casei*, *Lb. acidophilus* and *Bf. bifidum*) show 100% shelf-stability for almost 1 year.

Three different tests were done with three different capsule samples, showing again that Institut Rosell's shelf-stability works; 55% viability after 24 months.



Note: To extend **Probiotic 7-in-1's** product life to the maximum extent possible, it is kept refrigerated in Biomed's warehouse until it is shipped to you. The product's life is two years and will maintain its shelf life without deterioration outside of the fridge for at least 12 months. Nonetheless, storage in a cool place, such as a refrigerator, will extend the product's life even further.