The function of special yeasts in the rumen of dairy cows

Yeast is a facultative anaerobic bacteria. It can use oxygen to create an anaerobic environment for rumen micro-organisms in the presence of oxygen.

It is conducive to the growth and reproduction of anaerobic bacteria such as cellulose-, protein- and fat-decomposing bacteria, thus improving feed digestibility.

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Under the action of oxygen consumption of live yeast, it promotes the proliferation of lactic acid-utilising bacteria, inhibits the proliferation of lactic acid-producing bacteria and reduces the accumulation of lactic acid in the rumen.

At the same time, live yeast also uses a small amount of carbohydrate substrates in the rumen to comprehensively prevent rumen acidosis.

Yeast is also a direct source of nutrition. Live yeast is an excellent source of protein and amino acid because of its rich protein content. At the same time, yeast is rich in vitamins and some essential trace elements, digestive enzymes and unknown growth factors.

Therefore, live yeast can be used not only as a probiotic to regulate gastrointestinal flora, but also as a nutritional active ingredient or nutrient substrate for rumen micro-organisms and dairy cows.

With the increase of feed digestibility and the direct nutrition from yeast, the milk yield and quality of dairy cows can be improved.

Not all live yeast is suitable for dairy cows

YeaVita R is a special yeast strain selected for improving feed digestibility, regulating rumen health and improving ruminant production performance.

Angel Yeast has carried out more than 80 experiments through its own experimental platform and through an external joint research platform, with China Agricultural University, Huazhong Agricultural University, Sichuan Agricultural University, Texas Tech University, and University of Arizona in the United States, which has further confirmed that this specific live yeast is suitable for ruminants.

Not all live yeast can adapt to the rumen environment. By simulating the rumen environment, the growth curves of different active yeasts at different pH and temperatures were measured to observe the

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Fig. 1. Proliferation of YeaVita R and other live yeast under simulated rumen conditions in vitro.

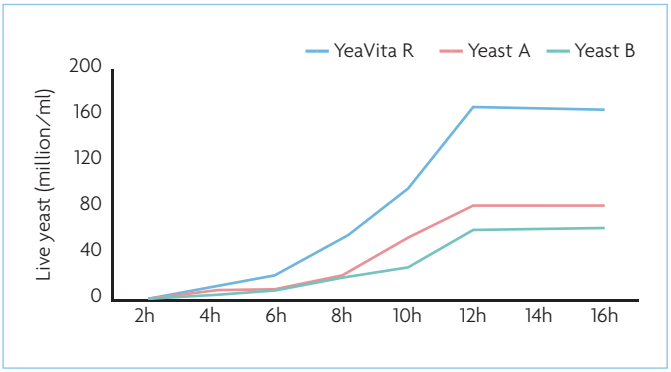
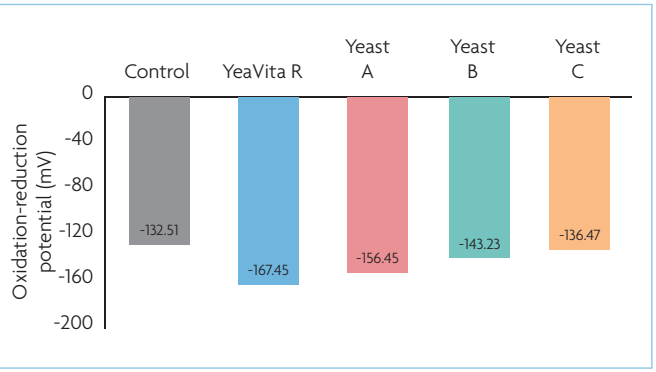


Fig. 2. Effects of YeaVita R and other live yeasts on oxidation-reduction potential.



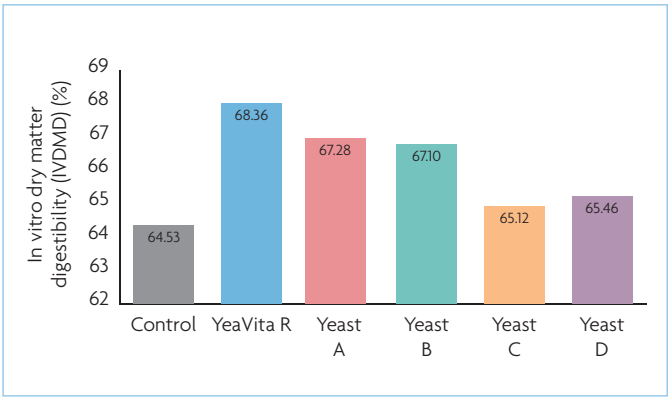


Fig. 3. Comparison of IVDMD among different live yeast.

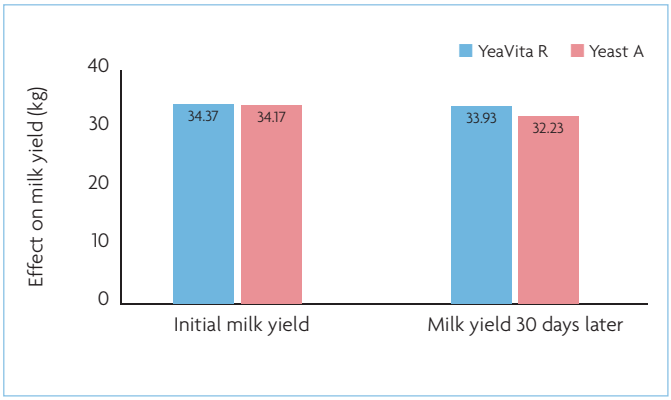


Fig. 4. Effects of different live yeast on milk yield.

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adaptation of active yeasts to the rumen environment.

From Fig. 1 it can be seen that YeaVita R is superior to common yeast in proliferation under simulated rumen conditions in vitro, thus better adapted to the rumen environment.

Oxidation-reduction potential

Oxidation-reduction potential is a measure of oxygen content in the rumen. The normal growth and reproduction of micro-organisms in the rumen require an anaerobic environment, and trace oxygen can be quickly metabolised with food intake.

However, ruminant and other physiological activities lead to a large amount of oxygen intake into the rumen every day.

If there is a large amount of oxygen in the rumen, it will promote the reproduction of aerobic bacteria such as lactic acid producing bacteria, inhibit the reproduction of anaerobic bacteria such as lactic acid utilising bacteria, and reduce the pH value of the rumen environment, leading to acidosis.

Fig. 2 shows that YeaVita R can consume more oxygen in the rumen, reduce the redox potential in the rumen, promote the growth of rumen micro-organisms, improve digestibility and prevent acidosis by real-time detection of fistula cows.

The in vitro digestibility of dry matter (IVDMD) method has the advantages of simple operation, good repeatability and easy standardisation, so it has been widely used. It is the most widely used technology to evaluate the feeding value of dairy cow feed.

It is a method of digesting feed samples in vitro with rumen juice and estimating the digestibility of organic matter by the ratio of gases produced during digestion.

As can be seen from Fig. 3, YeaVita R has the highest dry matter digestibility in vitro because YeaVita R consumes more oxygen to promote the growth of cellulolytic bacteria.

Milk yield of dairy cows

Dairy cows produce milk regularly during lactation. The milk yield of cows increases gradually after delivery. The milk yield of low-yielding cows reaches its peak 20-30 days after delivery, and that of high-yielding cows reaches its peak 40-50 days after delivery.

The peak period is long or short. The peak period usually lasts for about 20-60 days and then gradually decreases. The extent of decline varies according to the cow's body condition, feeding level, gestation period, breed and production performance.

Fig. 4 shows that the average milk yield of the YeaVita R group decreased by 0.44kg after 30 days, while that of common yeast decreased by 1.94kg. Therefore, adding YeaVita R can slow down the decline of milk production, and the effect is better than that of common yeast.

The data can prove that live yeast is indeed helpful to regulate rumen microflora and increase milk production. But not all live yeasts show the same effect. Some live yeast can not even survive in the rumen.

Dairy cows need special live yeasts. Only special screened yeast can regulate rumen health and improve milk production and production efficiency. ■