

# **Effect of VTYEAST S-7001 on milk Production and milk component in dairy cows in Australia**

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**Background:** Guangdong VTR Bio-Tech Co., Ltd. (VTR) is the biggest manufacturer of feed yeast and enzyme in China, and probably the biggest in Asia in terms of capacity. Macalister Demonstration Farm (MDF) is a co-operative research farm located in the Macalister Irrigation District in eastern Victoria, Australia. It is recognised by dairy industry groups as a credible and reliable organisation that has a strong history of delivering projects that are relevant to local farmers and meeting the expectations of project partners and stakeholders. VTR engaged MDF to undertake a trial for its product VTYEAST S-7001 in September 2017.

**Abstracts:** The Trial is to investigate the effect of VTYEAST S-7001, a special biological product (yeast + enzymes) for ruminant animals, on milk production, milk quality and health condition of cows fed under Australian pasture-based grazing and grain supplementary feeding conditions. From the herd, 132 cows of various breeds were chosen based on lactation time and milk yield and parity and were divided into two comparable groups to make up the control group and the test group. Each group had 66 cows that were grazed on fresh pasture and a grain supplement; VTYEAST S-7001 (40 g/ d·cow) was added into supplementary diet of the test group. The test period lasted for 6 weeks, during which milk yield data was recorded daily and milk composition analyses was done three times, respectively at the beginning, in the middle and at the end of the test. The result show

that average milk yield of the test group throughout the whole period was 28.68 L/ d·cow while that of the control group was 26.47 L/ d·cow, an average gap of 2.21 L/ d·cow. A week after the test began, average milk yield of the test group that was fed with VTYEAST S-7001 was higher than that of the control group and the difference went up increasingly; in the 6<sup>th</sup> week, average milk yield of FF cows was enhanced by up to 4.99 L/ d·cow. In terms of milk quality, VTYEAST S-7001 played a role in the improvement by enhancing total milk fat and milk protein as well as decreasing somatic cell count in milk. However, the difference was not statistically significant. During the whole period, 2 cows in the control group were eliminated due to serious mastitis and another due to a hip injury. In summary, VTR VTYEAST S-7001 was able to significantly improve milk production in dairy cow fed in the Australian feeding mode of grazing and supplementary feeding by 2.21 L/ d·cow on average. The product also can improve the health of cows and decreased somatic cell count in milk and, even though it made no significant improvement to milk composition, it enhanced total milk solid weight values by increasing milk volume.

**Key words:** Cows; grazing and supplementary feeding; milk yield; milk quality

## 1 Introduction

VTYEAST S-7001 developed by Guangdong VTR Bio-Tech Co., Ltd, a new organically prepared, biological product that combines special active yeast for ruminants with an enzyme preparation, has been widely used in China under TMR (Total Mixed Ration) conditions today. It has been shown to ameliorating rumen function by increasing digestibility and the utilization rate of fiber, starch and protein in the whole digestive tract. However, it has not been applied in Australia, where cows are grazed on fresh pasture with a grain supplement, usually in the form of crushed cereal concentrate enabling rapid intake, which is not good for the health of the cow's rumen. Besides, milk yield of an Australian cow still need to be improved and so as to achieve greater economic benefits. Therefore, the objective of experiment was to investigate the effect of VTRYEAST S-7001 on milk production, milk component, the health of cows and economic benefits under Australian feeding conditions.

## **2 Materials and methods**

### **2.1 Animals and diets**

The test location was in Gippsland, Victoria, in south eastern Australia. Cows of different breeds, mainly crossbreeds, were chosen and divided into the two groups of the control group and the test group according to lactation time and milk yield to make two comparable groups. Each group

had 66 cows that were grazed on fresh pasture and fed a grain supplement. over the test period of 6 weeks; VTYEAST S-7001 (40 g/ d·cow) was added into the supplementary diet of the test group.

### **2.2 Feeding management**

All experimental cows were grazed on fresh pasture and fed a grain supplement. The supplementary diet consisted of crushed wheat, calcium granules and mineral pellet premix to which VTYEAST S-7001 that was developed by Guangdong VTR Bio-Tech Co. Ltd, was added as a supplement to the diet of the test group. Each cow was given 4kg per day or 2kg at each milking supplementary diet when being milked. Cows were milked twice a day at 5 am and 3 pm respectively.

## **3 Results**

### **3.1 Effect of VTYEAST S-7001 on milk production**

The cows that received VTYEAST S-7001 exhibited greater milk yield than the control group (Fig. 1) Over the entire feeding period, the average milk yield of the test group was 28.68 L/ d·cow while the control group was 26.47 L/ d·cow. The test group had 2.21 L/ d·cow higher than the control group. Before the experiment, milk yields of the two groups were similar and, as the trial progressed, the total milk yield gradually decreased for both groups.



### 3.2 Effect of VTYEAST S-7001 on milk quality

The cows that received VTYEAST S-7001 had better milk quality, the total milk

fat and milk protein values were increased and the somatic cell count were decreased, even though the difference was not significant. (Table 2 and Table 3).

Table 2 Effect of VTYEAST S-7001 on milk quality

Item	Before			After		
	Control	Test	DIFFERENCE	Control	Test	DIFFERENCE
Protein,%	3.34	3.44	-0.10	3.34	3.45	-0.11
Fat,%	3.70	3.68	0.02	3.79	3.64	0.15
SCC ,10 <sup>4</sup> / mL	21.70	22.80	-1.10	26.8	24.2	2.60

### 3.3 Effect of VTYEAST S-7001 on economic benefits

Cows fed with VTYEAST S-7001 had significantly higher milk yield than the control group, which can deliver farmers a

significant economic benefit. Each cow in the test group made more than A\$ 0.86 profit per day than that in the control group (Table 3).

Table 3. Effect of VTYEAST S-7001 on economic benefits

Item	Treatment	
	Control	Test
Milk price, A\$/ kg milk solids (Fat + protein)	5.36	5.36
Milk yield, kg milk solids / d·cow	2.00	2.16
Milk value, A\$/ d·cow	10.72	11.58

### 3.4 Effect of VTYEAST S-7001 on health condition of cows

Cows fed with VTYEAST S-7001 had better health than the control group (Table 4) During the whole period, two cases of cows

dead for unknown reason and three cases of serious mastitis occurred in the control group. However, just one case of mastitis occurred in the test group.

Table 4. Effect of VTYEAST S-7001 on health condition and pregnancy rate of cows

Item	Treatment	
	Control group	Test group
Mastitis-culled	3	1
Dead (cow down unknown reason )	2	0
Total	5	1
Percentage	7.6%	1.5%
Pregnancy rate	85%	92%

#### 4 Conclusions

VTR VTYEAST S-7001 was able to significantly improve milk production in dairy cows under the Australian system of grazing on fresh pasture with a grain supplement, enhancing milk volume by an average of 2.21 L/d·cow. The product also

can improve the health of cows and decreased somatic cell count in milk, but had no significant influence on milk components, but improved total milk fat and milk protein values with the increased milk volume. This product can significantly enhance the economic benefits for famers.

Table 5. Effect of VTYEAST S-7001 on the cost of these cows

Item	Treatment	
	Control group	Test group
Mastitis- treatment cost	75	25
Production lose	1800	600
Dead lose	3000	0
Total	4875	625

Control group had more cost for the mastitis, milk production lose because of mastitis, and dead lose (Table 5). The control group lost about \$4875, and the VTYEST group just lost \$625, which meant the VTYEST group had \$4250 profit than the control group.



Fig. 2 Control Group Dairy Cow



Fig. 3 Test Group Dairy Cow