## Fly to Future

## Effects of Adding Stress Pack in Dairy Cattle Feed on Stress Due to Vaccination

## INTRODUCTION

- Vaccination is one of the stress-inducing factors in poultry and livestock.
- Common Vaccination programs in dairy farms are against: Brucellosis, Foot and Mouth Disease, Lumpy Skin Disease, anthrax (in some regions of Iran), etc.
- Vaccination against Foot and Mouth Disease may cause inflammatory reactions in 0.01 percent of vaccinated cows, reduction in milk production for 2 to 5 days and also decrease in fertility rate of cows.
- Dairy farm should have a proper management before vaccination and in vaccination day which can reduce the adverse effects of vaccination.

MATERIALS & METHODS

- This trial was performed in a dairy farm with 3050 population of cattles (1250 milking cow)
- Average of fertility rate: 40.5%

- FMD vaccine (produced by Razi Vaccine and Serum Research Institute)
- Cows were bled two times: in the vaccination day and the day after vaccination.
- The blood samples were tested for CBC in Razi Vaccine and Serum Research Institute.
- Average of milk production was measured and compared together in the day before and after vaccination.
- The data were statistically analyzed by one-way analysis of variance (ANOVA) and paired t-test.

Groups	Population	Stress Pack (per cow)*	Consumption	
Control	12 cows (in a barnyard with 100 cattle)	0	-	
Treatment 1	12 cows (in a barnyard with 100 cattle)	12 g	3 days (2 days before and 1 day after vaccination)	
Treatment 2	12 cows (in a barnyard with 100 cattle)	24 g		

<sup>\*</sup> Stress pack was mixed in feed

Table 1: white blood cell count in test groups: control and treatments (average ± standard deviation)

Groups	Neut. %	Lymph. %	Neut/ Lymph	Eosin %	Mono %
Control	43.1± 13.9	$51.6 \pm 14.8$	0.83	$0.53 \pm 1$	4.1 ± 1.47
Treatment 1	$37 \pm 12$	$57 \pm 12.7$	0.64	$0.4 \pm 1.1$	$4.5 \pm 2.4$
Treatment 2	39.8 ± 12.6	53 ± 13	0.75	$1.4 \pm 1.8$	4.9 ± 1.8

- Neutrophil to Lymphocyte Ratio in cow is around 0.53in normal conditions.
- The results show that Neut/Lymph in the treatment 1 (receiving 12 g stress pack per cow) is more near to normal condition and is less effected by stress in comparison to two other groups.

Table 2: Average of milk production in test groups before and after adding stress pack in feed (average ± standard deviation)

Groups	population	Average of milk production before vaccination	Average of milk production after vaccination	P Value of changes in milk production before and after vaccination
Control	114	48.8	50.4	0.17
Treatment 1	134	50.7	54.2	0.0004
Treatment 2	105	40.9	41.9	0.19

The results showed a significant difference between average of milk production before and after vaccination in the treatment 1, received 12 g stress pack (P<0.05).

- In conclusion the results showed that Stress Pack can improve the reduction of milk production which is one of the adverse effects of stress due to vaccination in dairy cows.
- adding 12 g (per cow) Stress Pack to cattle feed, 2 days before and 1 day after vaccination, can reduce the adverse effects of stress due to vaccination.
- Since Neut/Lymph ratio is one of the recommended quantitative methods for diagnosis stress in animals in several published papers, the results indicated that Stress Pack can decrease stress in cows in stressful conditions like vaccination.