

APIMONDIA 2009 41st congress

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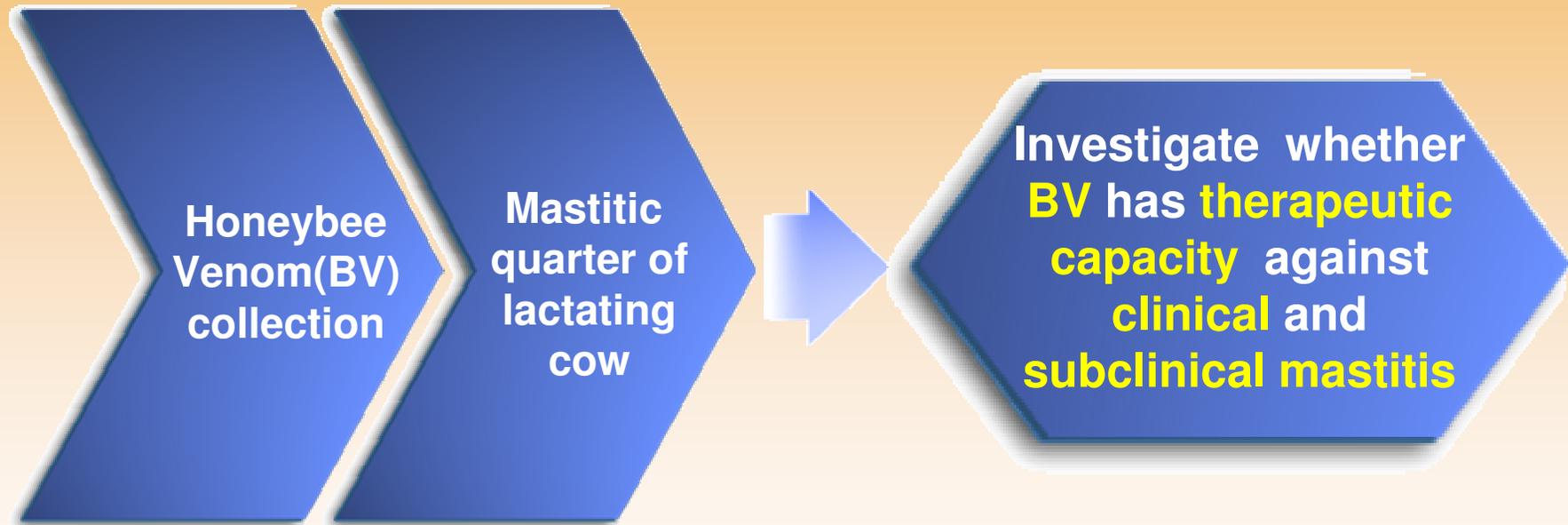
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Somatic Cell Count in Milk of Bee Venom Treated Dairy Cows with Mastitis



Object



Bee venom collection



**Bee venom collector
(Chungjin, Korea)**

For 30 min



Scratching the glass



Rake up bee venom

Bee venom purification



Crude bee venom

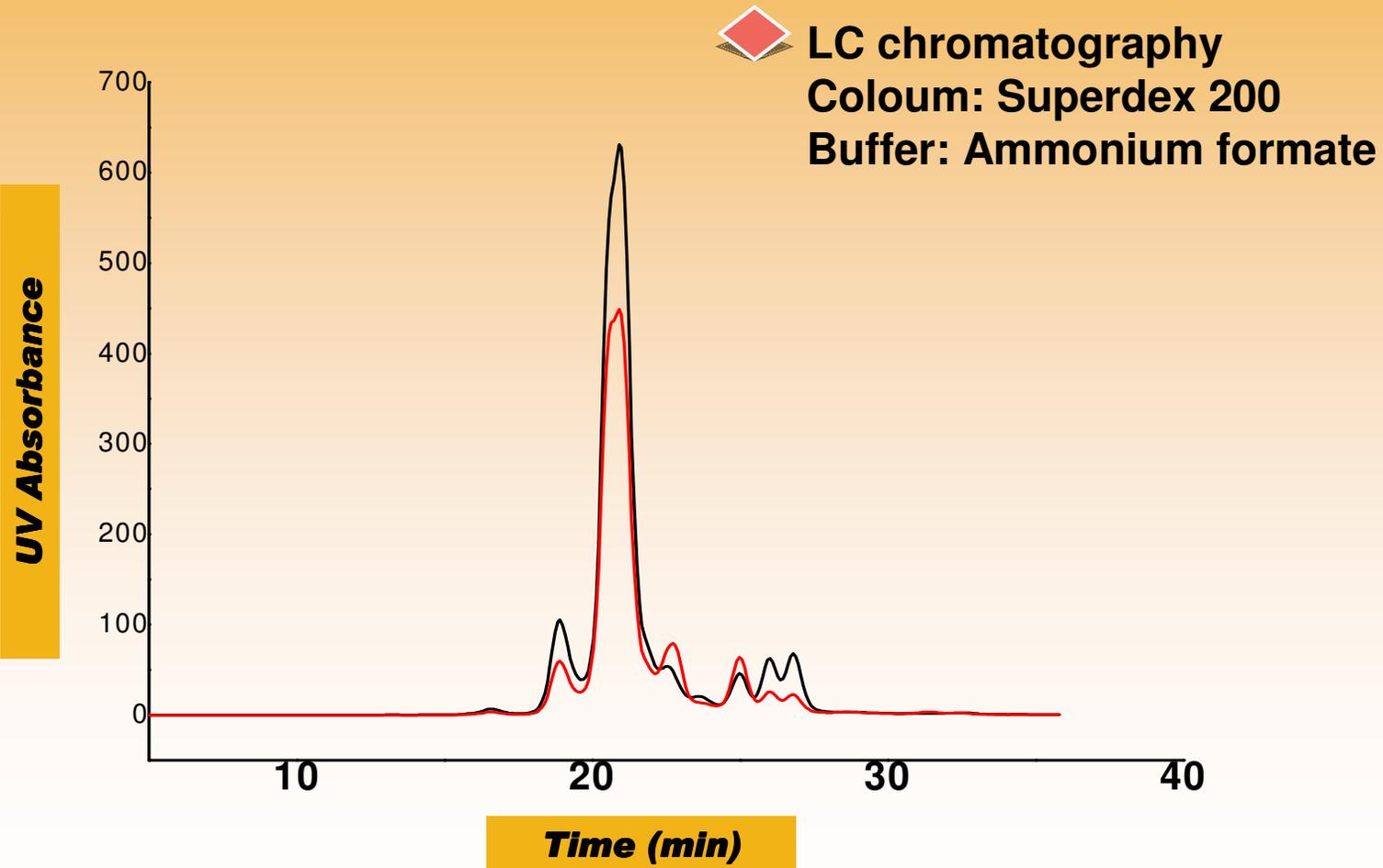


Purified bee venom



Bee venom for sale

Bee venom analysis



Holstein cow subjects



Design of experiment



→ **Total of 59 lactating cows with clinical and subclinical mastitis**

→ **Somatic cell count(SCC) in milk samples > 200,000 cells/mL**

→ **Bacteriological testing from individual quarter milk samples**

Treatment of Mastitic cows with BV



Dose

Dose effects of BV

a SCC \geq 9.99 million cells/ml of milk
Supramammary lymph node once daily

Method

Methods of BV administration

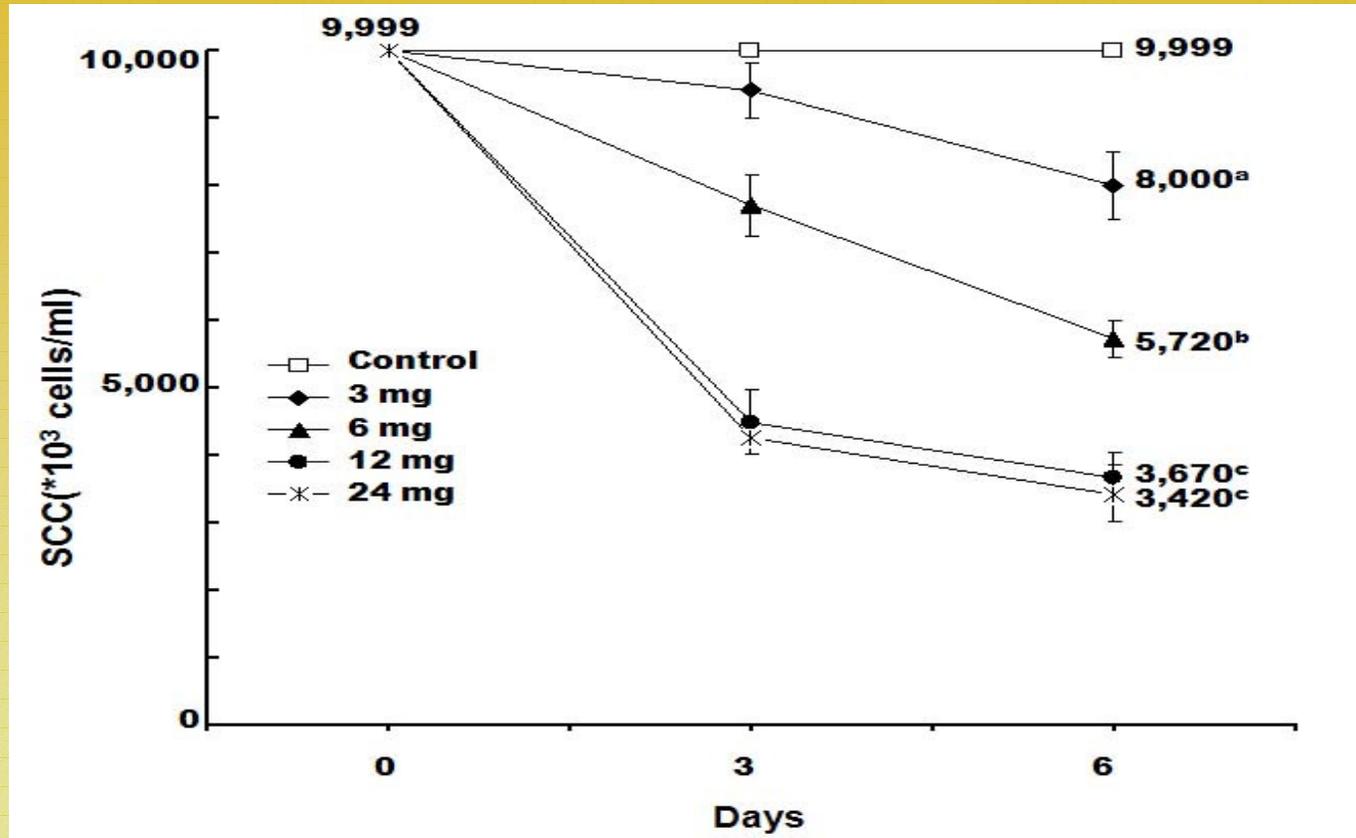
subcutaneous injection or
via intramammary infusion using Bovivet
Spentift

Pathogenic bacteria

Changes in SCC and pathogenic bacteria

12mg by infusion using Bovivet Spentift
once daily.

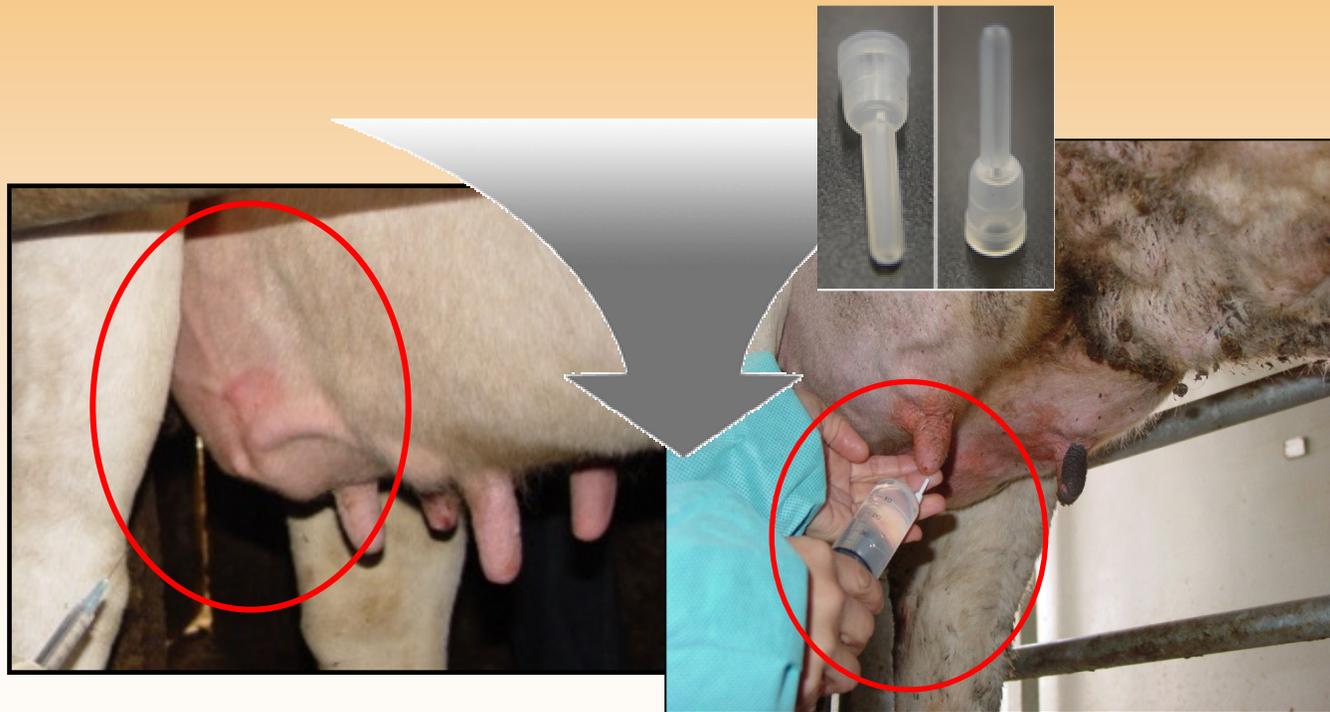
BV dose study



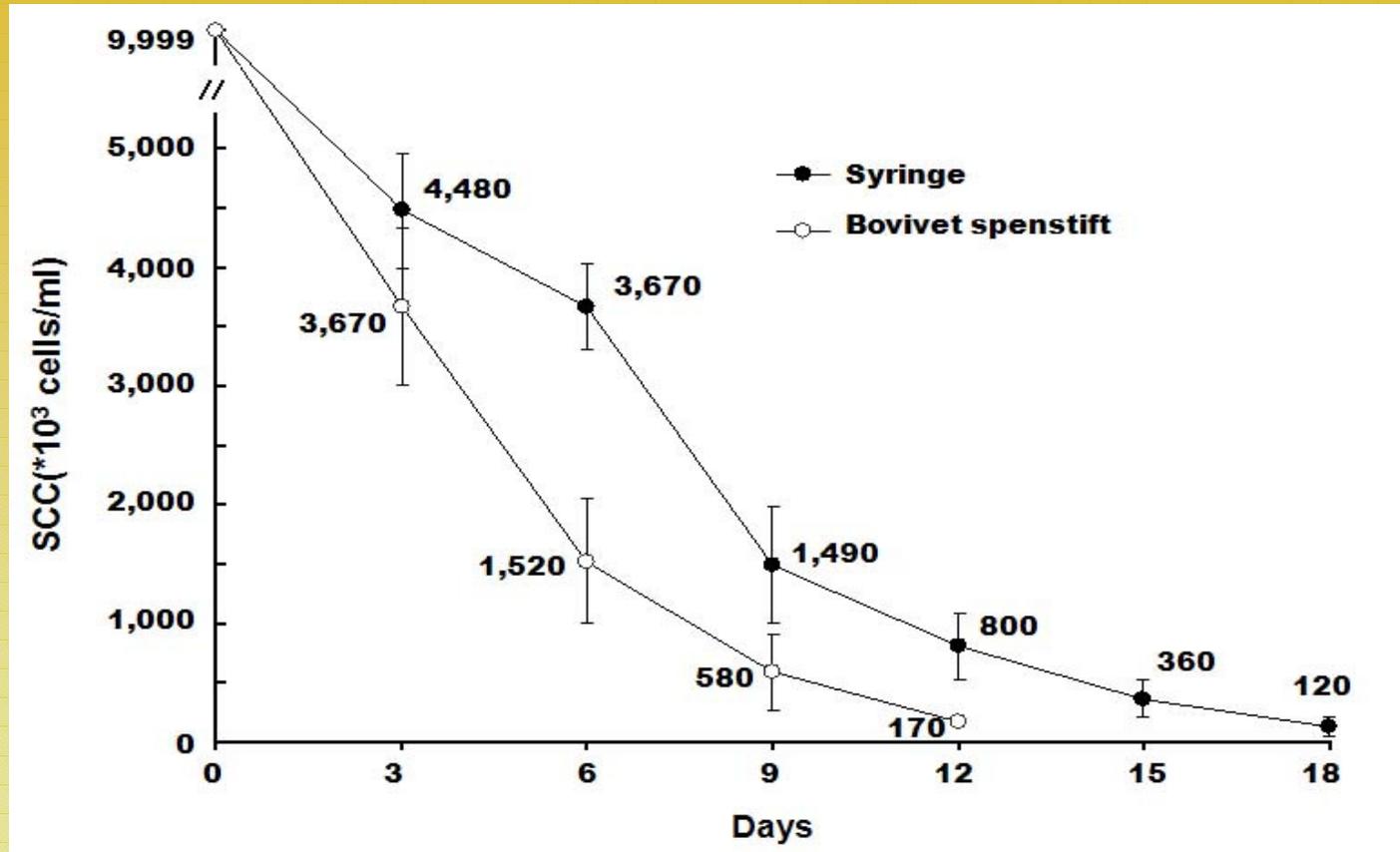
Changes of somatic cell counts (SCC) in milk after BV treatment of cows with mastitis (n=15). Values in a row indicated with different letters are significantly different ($p < 0.005$) compared with the control.



infusion using Bovivet Spenstift



BV administration study



Changes of somatic cell counts (SCC) in milk after BV application either subcutaneous or intramammary with Bovivet Spenstift to cows with mastitis (n=6).

BV effect on udder health



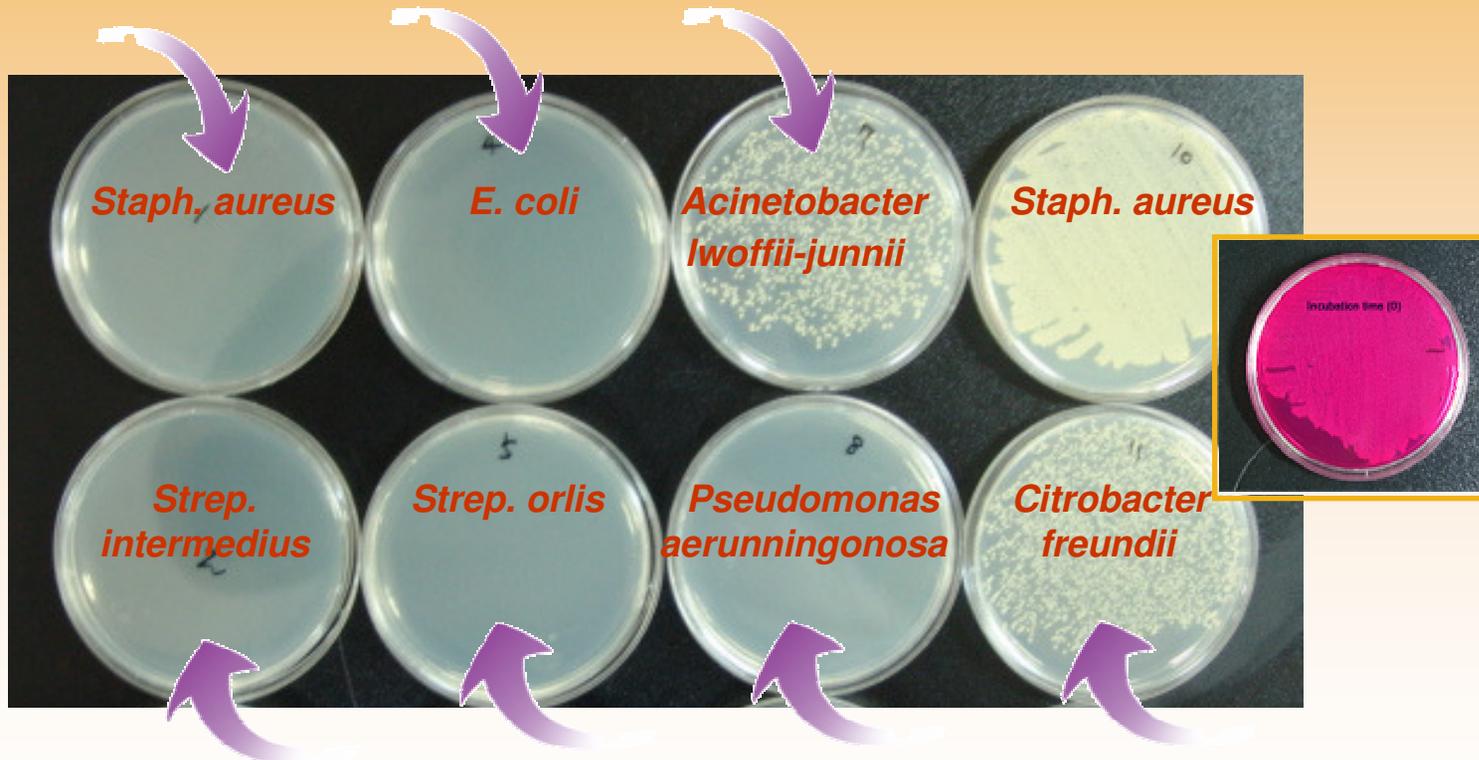
Changes of somatic cell counts by BV treatment of cows with mastitis

SCC ($\times 10^3/\text{ml}$)	No. of quarters (%)			
	Before	3 days	7 days	14 days
< 200	0	13 (24.5)	25 (47.1)	32 (60.4)
200-2000	18 (34.0)	14 (26.4)	13 (24.5)	12 (22.6)
2000-5000	12 (22.6)	11 (20.7)	7 (13.2)	7 (13.2)
> 5000	23 (43.4)	15 (28.3)	8 (15.1)	2 (3.8)

Antibacterial effect



Antibacterial effect of BV on pathogenic bacteria



Bacteriological testing



Microorganisms isolated from 53 quarter milk samples from 38 lactating cows and clinical cure rates by BV treatment

Microorganisms	No. of quarters sampled (%)	No. of cured quarters (%)*
<i>Escherichia coli</i>	3 (5.7)	1 (33.3)
<i>Pseudomonas aeruingtonosa</i>		
<i>Citrobacter freundii</i>	2 (3.8)	0
<i>Acinetobacter lwoffii-junii</i>		
<i>Staphylococcus aureus</i>	8 (15.1)	6 (75.0)
Other gram positive organisms	24 (45.3)	18 (75.0)
Other gram negative organisms	16 (30.2)	7 (43.8)
Total	53	32 (60.4)

Haematological values



Effect of BV treatment on the haematological values, total protein, albumin and IgG in cows

Item	cows with mastitis		Normal
	before honey bee venom injection	after honey bee venom injection	
WBC($k/\mu l$)	8.2 ± 2.5	8.2 ± 2.5	8.8 ± 1.1
RBC($M/\mu l$)	8.11 ± 0.3	7.9 ± 0.3	8.6 ± 0.3
Lymphocytes(%)	59 ± 3.5	62 ± 3.5	60.3 ± 3.2
Monocytes(%)	7.8 ± 0.2	7.8 ± 0.2	8.2 ± 0.3
Total protein (g/dl)	7.8 ± 0.6	7.9 ± 0.9	7.8 ± 0.6
Albumin (g/dl)	3.7 ± 0.3	3.8 ± 0.6	3.8 ± 0.6
IgG (mg/dl)	1800 ± 12.5	2100 ± 15.2	2200 ± 12.6

Conclusion



Our findings on SCC levels suggest that the udders treated intramammarily with **12 mg BV** through **Bovivet Spenstift** responded best

BV treatment of dairy cow with mastitis may have boosted mammary defence mechanisms, especially **in situations with the presence of pathogens**, and **significantly decreased elevated SCC levels in mastitic quarters**

This method may be an efficacious option to avoid frequent administrations of antibiotics

Further studies need to be done to prove the efficacy of BV in controlling *Staphylococcus aureus* intramammary infections considering the limited number of quarters involved and diagnosis of infections as reported here