PhyGeno
Plant Based Solutions

GenoLiv

Plant-Based Liver Stimulant

Effect of GenoLiv, a plant-based liver stimulant on liver enzymes, milk production and milk composition in crossbred Holstein Friesian cows facing liver health challenges

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Introduction

The Liver performs various metabolic functions in the body to maintain nutritional physiology. These functions involve the synthesis and metabolism of glucose, lipids, and proteins, ketone production, immune support, vitamin activation, storage of minerals and energy reserves. During the transition to lactation, the liver plays a vital role in adapting to dietary changes, hormonal fluctuations, and metabolic demands. Liver disorders in cows are attributed to negative energy balance, low dry matter intake, infectious diseases, and toxins resulting in liver damage. This risk is heightened during the periparturient period and in high-yielding animals.

Hepato-efficiency enhancers improve digestion and regulate detoxification. Polyherbal liver tonics for dairy animals provide safe and effective hepatoprotection (Singh and Peter, 2018).

Objective: A study was undertaken to assess the impact of GenoLiv – a plant-based liver stimulant on serum liver enzymes, milk production, and milk composition in crossbred Holstein Friesian cows exhibiting elevated levels of serum liver enzymes (SGOT and SGPT). The study was conducted at the Chitale Dairy, Bhilwadi, Maharashtra, India for a duration of 90 days.

Experimental Design

Group	Treatment Details	Animal/ Treatment
CONTROL	Basal Diet	5
T1	Basal Diet + GenoLiv @ 50 gm/animal/day	5
T2	Basal Diet + GenoLiv @ 100 gm/animal/day	5
	Total number of animals	**15**
	Duration of trial	**90 days**

Statistical Analysis

The data generated were statistically analyzed (Snedcor and Cocharan, 1994) using SPSS software version 20. The data was analyzed adopting two-way analysis of variance (ANOVA). The significant difference between the treatment means and periodic means at P<0.05 was detected by applying Duncan multiple range test.

Observation:

Table 1: Effect of GenoLiv on SGOT of crossbred Holstein Friesian cows during experimental period of 90 days

Group	SGOT (U/L)				Treatment mean	SEM	P - value
	0-d	30-d	60-d	90-d			
Control	86.06	82.53	81.40	86.80	84.20^{a}	2.39	Treatment <0.001 Period <0.001 Treatment X Period<0.001
T1	105.8	55.84	34.20	29.00	56.20^{b}	7.04	
T2	106.6	71.63	42.20	25.40	61.45^{b}	7.32	
Period Mean	99.46^{x}	70.00^{y}	52.60^{z}	47.07^{z}			
SEM	3.54	3.93	5.80	7.63			

^{a,b} Means in the same column with different superscripts differ significantly
^{x,y,z} Means in the same row with different superscripts differ significantly

Serum glutamic oxaloacetic transaminase (SGOT) and serum glutamic pyruvic transaminase (SGPT) are recognized as biomarkers indicative of the state of liver health. Result showed that the mean serum SGOT concentration was significantly (P<0.001) lower in the hepatoprotective herbal mixture (GenoLiv) supplemented groups (T1 and T2) in comparison with control group. The mean serum SGOT concentration was significantly higher (P < 0.001) before commencement of the trial, followed by the first month, and it decreased after the second and third months of the trial in both GenoLiv supplemented groups.

Table 2: Effect of GenoLiv on SGPT of crossbred Holstein Friesian cows during experimental period of 90 days

Group	SGPT (U/L)				Treatment mean	SEM	P - value
	0-d	30-d	60-d	90-d			
Control	39.28	33.63	29.62	26.80	32.33	1.84	Treatment = NS Period <0.001 Treatment X Period=NS
T1	44.72	31.31	22.60	21.00	29.91	2.51	
T2	42.42	30.90	22.20	18.37	28.47	2.30	
Period Mean	42.14^{x}	31.95^{y}	24.81^{z}	22.06^{z}			
SEM	1.74	1.75	1.60	1.40			

NS: non-significant

^{x,y,z} Means in the same row with different superscripts differ significantly

There was no significant difference (P>0.05) in serum SGPT (U/L) concentration between groups due to graded levels of GenoLiv. However, the concentration of SGPT was significantly higher (P < 0.001) before commencement of the trial, followed by the first month, and its lowest value was found after the second and third months of the trial. Also, there was no interaction (P>0.05) between the treatment and period.

Table 3: Effect of GenoLiv on average milk yield (litre/day) of crossbred Holstein Friesian cows during experimental period of 90 days

Group	Average milk yield (Litre/day)				Treatment mean	SEM	P - value
	0-d	30-d	60-d	90-d			
Control	13.40	12.98	13.46	13.14	13.25^{c}	0.798	Treatment<0.001 Period=NS Treatment X Period=NS
T1	24.80	25.40	26.98	28.02	26.30^{a}	0.671	
T2	20.80	21.70	23.48	23.74	22.43^{b}	0.963	
Period Mean	19.67	20.03	21.31	21.63			
SEM	1.77	1.65	1.71	1.79			

NS: non-significant

^{a,b,c} Means in the same column with different superscripts differ significantly

Result showed that the average milk yield (litre/day) was significantly (P<0.001) higher in the T1 group followed by T2 group and lowest in the control group. However, the average milk yield was comparable (P>0.05) among the groups at different time periods. There was no interaction (P>0.05) between the treatment and period.

Figure 1. Effect of GenoLiv on SNF % and average milk fat yield (g/day) of crossbred Holstein Friesian cows during experimental period of 90 days

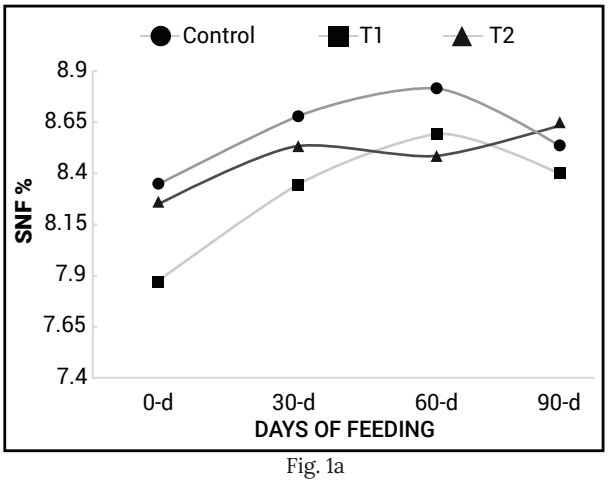


Fig. 1a

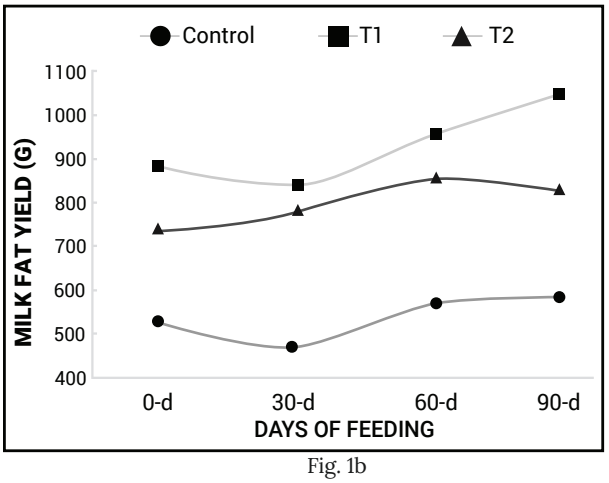
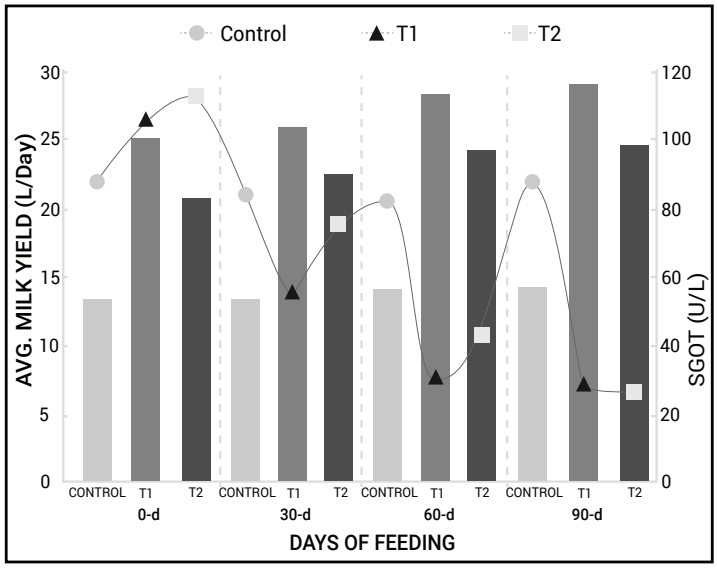


Fig. 1b

The graph (Fig. 1a) shows that the mean Solid Not Fat (SNF) percentage increased similarly across all groups. The maximum SNF% was observed after 60 days of the trial in the T1 and control groups and after 90 days in the T2 group. There was no significant difference (P>0.05) in SNF% among the groups due to GenoLiv supplementation.

The graph (Fig. 1b) shows that there was a higher average milk fat yield (g/day) in the T1 and T2 groups compared to the control group. After the first month of the trial, average milk fat yield was lower compared to the commencement of the trial, and this decrease was observed in all groups except T2. In the second and third months of the trial, the milk fat yield in the GenoLiv supplemented groups (T1 and T2) significantly (P<0.05) increased compared to the control group. However, in the control group, the milk fat yield remained almost equivalent to that observed at the commencement of the trial.

Figure 2: Effect of GenoLiv on the average milk yield (Litre/day) and serum SGOT (U/L) concentration of crossbred Holstein Friesian cows during the experimental period of 90 days



The bar graphs of Fig. 2 clearly shows that during the start of trial, there was a higher serum SGOT level in the T1 and T2 groups compared to the control group, along with a higher milk yield. After supplementing GenoLiv to the T1 and T2 groups, there was a reduction in serum SGOT level compared to the control group after the first month of the trial. Additionally, there was an increase in the average milk yield (Litre/day). However, in the control group, there was a reduction in milk yield compared to the beginning of the trial. The same pattern was observed after the second month of the trial, and by the third month, the GenoLiv supplemented group had the lowest SGOT value along with the highest milk yield, while the control group had higher serum SGOT and the lowest milk yield.

Conclusion

The present study revealed that the inclusion of GenoLiv in the diets of crossbred Holstein Friesian cows affected with impaired liver function (elevated SGOT and SGPT levels), led to a reduction in liver enzymes. GenoLiv aids in enhancing both milk yield and average milk fat yield by restoring normal liver function.
These results emphasize that GenoLiv serves as an effective hepatoprotective herbal supplement for cows showing compromised liver function.

Reference

Singh, B., & Peter, K. V. (Eds.). (2018). New age herbals: resource, quality and pharmacognosy. Springer.

Snedecor, G.W. & Cochran, W.G. (1994). Statistical Methods. 8th edn., The Iowa State University Press, Ames, Iowa, USA.