

IMPACT OF CARNATIC MUSIC ON MILK YIELD

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Abstract

The Indian culture gives special place to the cow. The cow is seen as a maternal figure, a care taker of her people. Hinduism is a religion that raises the status of cow to the level of Goddess Kamadhenu (Omni giver). Cow is the insignia of holiness, sacrifice, piousness. Therefore, the cow is considered a sacred animal, as it provides us life sustaining milk. The cow also symbolizes dignity, strength, endurance, maternity and selfless service. In Hinduism the protection of cow occupies a primary place. The cow, provides four products for human use: (i) Godugdha (cow milk), (ii) Goghruta (ghee), (iii) Gomutra (urine), (iv), Gomaya (dung). The products of holy cow like milk, curd, ghee, urine, dung are called as “panchagamayam”. It is believed that wealth, health, enjoyment and salvation are accomplished with the service to the cow. Entire life of farmers is dependent on the cow. Apart from the above, cows are great fans (rasikas) of music, she likes music she responds to music. Lot of evidences from Hindu mythology and earlier Indian literature are available to prove the influence of music on other living species on the planet specifically on cows and milk yield. It is said that Lord Krishna’s flute music made the cows to secrete more milk and the calf also forget to drink milk from its mother while listening to His music. This paper is to highlight the impact of Carnatic music on the milk yield of the Cows.

Keywords: *Kamadhenu, Godugdha, panchagamayam, Gomaya, Carnatic, Gosamrakshana shala, Goshala*

Music and Milk Yield

Music is the language of emotions. It is concerned with sounds that are calculated to bring on pleasant feeling in us. Music has universal appeal and influences over humans, animals and even plants. The following sloka explains the greatness of music “Sisur vethi, Pasur vethi Vethi gana rasam Phanihi” says, the cow, the infant and even the serpent feel the charm of music. There are lots of experiments practiced in international platform to increase milk yield in cows through music. Some glimpses of such attempts follows

Psychologists at the University of Leicester, UK, attempted by playing music of different tempos to herds of Friesian cattle and found Beethoven’s Pastoral Symphony and Simon & Garfunkel’s Bridge Over Troubled Water were a big hit in the milking shed.

A British Colombian Dairy Association, conducted a music competition for increasing milk yield in their dairy farm in 2012 in the title “Music Makes More Milk” contest, launching October 10, in which members of the public are invited to compose songs for cows in order to naturally increase milk production News wire (2012), Published on 9th Oct, 2012.

‘Calming music can improve milk yield, probably because it reduces stress,’ said Dr Adrian North, who carried out the study with his colleague Liam MacKenzie.

Research Project in India

To validate the relevance between music and milk yield, first time in India a serious, systematic and scientific investigation on the impact of Music on the cow and the Milk yield is undertaken through a major research project by the author and the co-author with the financial assistance of University Grants Commission, New Delhi entitled ‘Impact of Carnatic music on the milk yield of S.V.Gosamrakshanashala, Tirupati’. Gosamrakshnashala is a place where all cows are sheltered and given proper care. Sri Venkateswara Gosamrakshana shala Trust was established by Tirumala Tirupati Devasthanams in 1956 has an approximate number of 2200 cows. Located at the Chandragiri road, Tirupati established with 150 acres of land. The milk and its products produced here are being used by TTD for daily rituals at Sri Venkateswara Temple and other TTD Temples.

Apart from cows, there are Bulls, Elephants, Deer, Camels, Rabbits, Horses, Buffaloes, Peacocks and Ducks are also raised in this Goshala. Camels, Bulls, Elephants and horses are often used in the processions of Lord during annual festivals in Tirupati. A team of Veterinary doctors are working round the clock to take care of the health of Cows and other animals in this Gosamrakshana shala.

Research Problems

To investigate the relevance between music and milk yield the following questions were raised in general and which are considered as the vital problems of this research and which helps a lot in developing the methodology.

- Whether the cow identifies the difference between sound and music?
- Whether it likes music or not?
- How one comes to a conclusion that it likes music?
- What are the ways to measure the cow’s happiness?
- If the cow gives more milk it may be the involvement of other factors also like food, fodder, climate ...etc.? and how one comes to a conclusion that the impact of music causes for the increase in milk yield?

Veterinary relevance

Scientifically the milk yield of a cow depends on its physiological needs and biological conditions which are correlated to veterinary science. Milk yield of a cow depends on so many aspects like the following

- Age and size of the cow
- Breed
- Nutrition

- Lactation period
- Parity
- Calving
- Metabolic diseases
- Environment,
- Water, Food ... etc

The veterinarian needs of cows are maintained by the team of doctors belongs to S.V. Gosamrakshanashala according to the set standards considered as constant during the project period. Observation is made of its food, fodder, water consumptions including day temperature and its health conditions.

Music Relevance

To determine the influence of music the following musical aspects like

1. Selection of raga
2. Tempo of the song
3. Composition
4. Raga alapana
5. Duration of the song
6. Vocal rendering exposure
7. Instrumental rendering exposures etc are considered for experiment.

Technically according to milk yield the cows are divided into two major sections

1. Peak lactation cows
2. Late lactation cows.

During the project period the veterinarian needs of the cows are taken care by the team of Doctors and maintained constantly in the set standards of the Goshala. Songs are exposed to the cows through the speakers.

Methodology

- 24 cows are identified and selected from the peak and late lactation groups with the help of veterinary doctors for the implementation of project work.
- The regular milk yield of the selected cows for 5 days was observed and noted in normal care (according to the set standards).
- The accessibility for fodder and water according to set standards is maintained as usual during the experiment period.
- For every six cows a speaker was arranged for playing music in the Cowshed.
- Audio recordings of various music legends' renderings in select ragas are collected.
- Playing one raga for the cows both peak and late lactation for continuously three days and the milk yield is observed.
- One day gap is given to observe the difference in milk yield

- Music playing is done only two hours per day in the evening time as per the advice of the doctors
- Milking time of the cows is fixed as 4 a.m. for the morning session and 4 p.m. for the evening session.
- The milk yield result is observed and the difference between the yield in normal days and after hearing the select ragas is calculated.

Pilot Study on the Impact of Ragas on Milk yield

A pilot study on the impact of ragas on the milk yield of the cows was conducted in the Goshala. It is well known that the heart and soul of Indian classical music is ragas. Among the ragas only the following shadja grama ragas are selected to play for the cows for the pilot study.

- Sankarabharanam
- Karaharapriya
- Todi
- Kalyani
- Harikambhoji

Compositions rendered by famous stalwarts like M.S.subbalakshmi, Maharajapuram Santanam, M.Balamurali Krishna, Suguna Varadachari, Lalgudi Jayaraman, Sudharaghunadan and Cherthala K.N. Rangantha Sharma were collected and played for the cows. Violin, flute renderings in corresponding ragas also included for the study. The overall results of the pilot study as follows

Average milk yield of the Peak lactation cows

- Average milk yield is increased up to 6.4Ltrs/day after playing Sankarabharana raga.
- Average milk yield is decreased 3.94Ltrs/day after playing Karaharapriya raga.
- Average milk yield is increased up to 2.73Ltrs/day after playing Todi raga.
- Average milk yield is decreased 1.94Ltrs/day after playing Kalyani raga.
- Average milk yield is decreased 2.27Ltrs/day after playing Harikambhoji raga.

Late lactation cows average milk yield

- Average milk yield is increased up to 5.66Ltrs/day after playing Sankarabharana raga.
- Average milk yield is increased up to 0.66Ltrs/day after playing Karaharapriya raga.
- Average milk yield is increased up to 0.83Ltrs/day after playing Todi raga.
- Average milk yield is decreased 5.67Ltrs/day after playing Kalyani raga.
- Average milk yield is decreased 8.34Ltrs/day after playing Harikambhoji raga.

Examining the overall results of the pilot study it is appeared that Sankarabharanam and Todi are the two ragas which are more effective and having high impact on Cows in milk yield in both Peak and late lactation groups.

First Cycle of Experiment

To put emphasis on the rhythm aspect of carnatic music, in the first cycle it is decided to play Dakshina Sampradaya bhajans for the experiment. Bhajans rendered by professional bhajan groups in a crisp tempo are selected and edited for 90 minutes and a CD is prepared. Every day in the afternoon, these Bhajans rendered in various ragas are exposed to the selected cows. This process is continued for four days. It is well known that the tempo of bhajans is in speed mode. Most of the Bhajans are set in Drutha and madhyama kala. Traditional bhajans set in ragas like Natta, Arabhi, Kanada, Kapi, Sindhubhairavi, Bhairavi, Todi, Hamsadwani, Keeravani, etc... are played during the session.

Observations

The following observations are made during the implementation of the project experiment.

- Most of the cows used to sit down in a calm manner and relaxed during the play of songs. (Though the food, fodder & water is made available for them most of the cows used to sit during the play of songs) After the play they stand up and eat fodder or drink water.
- Consumption of water and food is gradually increased during the period
- Regarding milk yield the following results are observed

Impact of Bhajans on Peak lactation cows

S.No	Number of the Cow	Breed	Average Increase % in Milk Yield After Exposing to Bhajans
1	P1	Ongol	3.35%
2	P4	Jersey	3.33%
3	P5	Ongol	7.60%

*Among the selected cows two cows were not responded positively. In Cow no P-3 (3.25%) & P-2 (3.03%) belongs to Jersey breed, a nominal decrease in milk yield is observed during the experiment period.

Impact of Bhajans on Late Lactation Cows

Generally Milk yield decreases day by day in the late lactation group cows. But the impact of music is reducing the average reduction of milk in cows. Because of the impact of music instead of reduction milk yield increased in a nominal level 1.98% / day

- The impact of music maintained an average of 4.16% reduction in L-1 and 9.57 % reduction in L-3 during the project period.
- Though it is late lactation period the impact of music capable to increase the milk yield up to 27.45% difference in Cow No: L-5 belongs to Holstein Friesian breed.
- The reduction average of milk yield is controlled up to 4.16 % in L-1 of Ongol breed
- The reduction average of milk yield is controlled up to 9.57% in L -4 of Sahiwal breed

- Cows L2, L3 & L6 responded positively and a nominal increase of milk 4.42% in L2 and 4.16% in L3 and 4.08% in L6 are observed respectively
- Overall increase in average milk yield in all the selected cows 8.43%/day/cow

Conclusion

“Happy cows produce more milk and cows respond positively to music.

Music makes them happy.” - Dave Eto, Executive Director, B.C. Dairy

The power and positive impact of Carnatic music on the stimulation of milk yield in peak lactation cows are established through the increase in milk yield. It is observed that 80% of the peak lactation cows are responding positively to music. The increase in the milk yield signifies that the cows are enjoying music and they feel happy. Because of the impact of Carnatic music, the decline level of milk in cows almost stopped and the milk yield is increased to a minimum level. The increase in the milk yield is calculated only under the set conditions including the availability of water, food, milking time and temperature of the day which is maintained as per the set standards of the Goshala. The project work is now in its midterm and still the investigation is going on to find out how the cows are responding to various aspects of Carnatic music i.e like response to various ragas, musical compositions, instrumental music etc... So far only six cycles of experiments are conducted and the remaining interesting results will be followed in the form of articles in the forthcoming issues. The positive impact of Carnatic music on the milk yield may helpful in the development of rural socio economic development of the society Author is humbly welcoming your valuable suggestions & ideas for further development of research in this arena.

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