CHAPTER-25

THE EFFECT OF INDIAN CLASSICAL MUSIC ON THE GROWTH AND DEVELOPMENT OF *TRIGONELLA FOENUM-GRAECUM* AND *CICER ARIETINUM*

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Summary

The Indian Classical Music is having effect on the growth and development of organisms. Two different plants species (*Trigonella* sp. and *Cicer* sp.) were treated with the Indian classical music. The treatment include the classical music from Kirana Gharana and Jaipur Gharana. The results were observed for seed germination and vegetative growth. It is observed that the treated samples showed better growth and development with respect to control.

Keyword: Germination, *Trigonella foenum-graecum*, *Cicer arietinum*, Indian Classical Music.

Introduction

Music originated in 'Saam-Veda' having method of rendition called 'Saam-Gayan'. Later 'Dhrupad' & 'Dhamar' evolved followed by 'Khayal Gayaki'. Plants are known to respond the environment and sound waves, including music. Behaviour of plants in response to various stimuli was studied by Sir J.C. Bose (1902).

Indian classical music, with its rich melodic patterns and rhythmic cycles, offers a unique opportunity to explore the impact of sound on plant growth and development (Anindita and Anshu 2015). The *Trigonella* sp. (fenugreek) and *Cicer* sp. (chickpea) are economically important species belonging to family Fabaceae are considered for present investigations.

Plants grown in the presence of music had increased growth rate and biomass production compared to those grown in silence (Meena et. al., 2014). Music exposure increased the germination rate and seedling vigour of wheat seeds (Raghu et. al., 2017). Plants exposed to music had increased root length, shoot length, and biomass compared to control plants (Maruthi et. al., 2011). A music with a frequency range of 200-800 Hz promoted plant growth and development (Kim et. al., 2012). When melodious music therapy is applied to the plants, it shows positive results. Plants grow faster when exposed to the music (Deepti et. al., 2015). Plants developed easier and grow faster only on slow rhythm, specially played by instruments made of natural elements (Rachieru et. al., 2017). Sound and music has a significant impact on the growth and germination of *Rosa chinensis* (Vidya et. al., 2014). Balsam plants exposed to Indian classical music grew 20% taller and had a 72% increase in biomass compared to control (Singh 1962).

Materials and Methods

Seeds of *Trigonella* sp. and *Cicer* sp. were purchased. Five pots (Four experimental & one control) having 100 seeds each were prepared. *Trigonella sp.* was treated with Kirana gharana while *Cicer sp.*with Jaipur gharana. The duration of treatment was twenty five minutes (Jean et. al., 2003). The common ragas of both gharana were selected and played at a time according to rag samay chakra i.e. Morning- Rag *Vibhas*, Afternoon- Rag *Gaud Sarang*, Evening- Rag *Multani*, Night- Rag *Darbari kanada*.

Results and Discussion

In case of *Trigonella* sp. Treatment with **Kirana gharana** the morning rag *Vibhas* has shown (81%), Afternoon rag *Gaud Sarang* has shown (85%), Evening rag *Multani* has shown (87%), Night rag *Darbari kanada* has shown (67%) germiation, as compare to control control has shown in Morning (66%), Afternoon (71%), Evening (74%), Night (74%) germination.

Table-1: Effect of different raga on germination percentage of Trigonella and Cicer

species.						
Sr. No.	Days	Rag	(Kirana) <i>Trigonella</i> sp.	(Jaipur) <i>Cicer</i> sp.	(Control) (Kirana) <i>Trigonella</i> sp.	(Control) (Jaipur) <i>Cicer</i> sp.
1	Day 4-7	Vibhas	81%	49%	66%	44%
2		Gaud Sarang	85%	53%	71%	51%
3		Multani	87%	68%	74%	56%
4		Darbari	67%	69%	74%	61%

The Cicer sp. Was treated with **Jaipur gharana** – The morning rag *Vibhas* has shown (49%), Afternoon rag *Gaud Sarang* has shown (53%), Evening rag *Multani* has shown (68%), Night rag *Darbari kanada* has shown (69%) germination,

control shown Morning (44%), Afternoon (51%), Evening (56%), Night (61%) germination.

The Morning rag *Vibhas* of Kirana gharana is having (32%) more germination with respect to Jaipur gharana. The Afternoon rag *Gaud Sarang* (Kirana gharana) is having again (32%) more germination with respect to Jaipur gharana. The Evening rag *Multani* sung by Kirana exponent is having (19%) more germinations than Jaipur gharana. Samples treated with Night rag *Darbari kanada* from Jaipur gharana(69%) is having (2%) more germination than Kirana gharana.



Fig. 1: Impact of Classical ragas on growth and germination of Trigonella and Cicer species.

Conclusion

Indian classical music shows positive effect on growth and development of plants. The blank are having less development with respect to treated samples. The rag samay has shown its influence on growth and germination. The evening rag (Multani) has shown strong positive effect on growth and germination of *Trigonella sp.* (Kirana gharana). The *Cicer sp.* was observed to have positive effect of Night rag (*Darbari kanada*) from Jaipur Gharana. It is concluded that the Indian classical music has significant impact on the plant growth and development.

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