


Ecobiology of Thermal springs of Jammu (J&K)

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Utilization Certificate

1. Title of Project/ Proposal	Ecobiology of Thermal springs of Jammu (J&K)
2. Name of the scheme	Innovative research activities
3. Name of the Institute	University of Jammu
4. Name of the Department	P.G. Department of Zoology
5. Principal Investigator	Dr. Arti Sharma
6. Sanction order no. and date of sanctioning of project	RA/19/5907-18 Dated 28-02-2019
7. Head of account	PO3 M20
8. Amount received	Rs 55,000/- (Fifty five thousand only)
9. Total amount available for expenditure	Rs 55,000/- (Fifty five thousand only)
10. Actual expenditure incurred	Rs 54,999/- (Fifty four thousand nine hundred and ninety nine.
11. Balance amount available at the end of financial year	Rs 1/-
12. Amount to carried forward to the next financial year	Nil

Certified that out of Rs 55,000/- of grants-in-aid sanctioned during the year 2019 in favour of Dr. Arti Sharma under this institute/ department letter/ order no. RA/19/5907-18 Dated 28-02-2019, a sum of Rs 54,999/- has been utilized for the purpose of Innovative research activities for which it was sanctioned.


Signature of P.I.
Assistant Professor
Department of Zoology
University of Jammu
JAMMU

Signature of Registrar/Head

Date:

Accounts Officer

Date:

Title of project	Ecobiology of Thermal Spring of Jammu (J&K).
Principle investigator	Dr. Arti Sharma Dept. of Zoology, University of Jammu.

Objectives of the project

Hot springs are those places where the temperature of water lies significantly above the mean of annual air temperature of that region. Humans have had various kinds of relations with hydrothermal features throughout history, continuing even today. Since ancient times, hot springs have been used for medicinal purposes. Many reports have shown that water of hot springs has therapeutic effects for treating various diseases. There has been a long history of people bathing in hot springs to treat skin diseases, stomach and rheumatic disorders. Thermal springs nowadays under severe anthropogenic stress due to increased use for industrial processing, agricultural, aquaculture, bottled water extraction of rare elements. (Baradac's et al. 2001, Atkinson and Davidson, 2002 , Helemen and Ramsey 2004, Petracchia et al, 2005). Jammu and Kashmir has various hot water springs. Tatapani is one of such hot spring which is located in Kalakote region of Rajouri. The village is named after spring that expands in an area of about 3sq kms. The spring water is considered to be of great importance for healing various bodily ailments. The present study was undertaken with following objectives:

- a. Survey of hot springs of Jammu province.
- b. To study the seasonal variations in the water quality of hot springs.
- c. Quantitative and qualitative analysis of zooplankton.
- d. Quantitative and qualitative analysis of phytoplankton.
- e. To identify the microbial flora.
- f. Qualitative estimation of periphytons.

Achievements

- a. Survey of Kalakote belt was done to identify the hot water springs.
- b. Tattapani spring was identified for study purpose.
- c. Seasonal analysis of its water quality and biota was done.
- d. Physical parameters of water were analysed on the spot which show that temperature remains high during the study period.
- e. Chemical parameters were analysed on the spot and showed that dissolved oxygen and carbonates remain absent during study period . FCO_2 and bicarbonates remain high during study period.
- f. Phytoplankton identified from hot springs are *Navicula*, *Chroococcus*, *Geiterinema*, *Oscillatoria*.
- g. Preliminary bacteriological studies were also done and bacteria identified are *Bacillus* sps.