

Exploring The Future Potential Of Balneotherapy At Unapdev Hot Spring In Khandesh Of Maharashtra, India

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Abstract:

In geography of health, geopharmacology is an emerging and novel branch of research. The word geopharmacology consists of geography and pharmacology, in which geographical components and elements are studied from pharmaceutical and medicinal point of views. These points of views are useful for the wellness of human being. So hot spring is one of the core components of geopharmacological research.

Geopharmacology of hot springs in India, play and significant role in Indian cultural heritage as well as therapeutics benefits and natural beauty provinces of Maharashtra, Unapdev has been hot springs and have their socio-cultural as well geopharmacological importance. [1]

The results of this study indicate that there is potential to establish a balneotherapy centre near the Unapdev hot springs. However, it is discovered that both visitors and locals have relatively little information about balneotherapy. The majority of visitors come to Unapdev hot spring for both tourism and traditional and spiritual reasons. According to research findings, Unapdev water springs have all the prerequisites to be turned into a balneotherapy facility and its application in the medical field holds great promise for the future.

Keywords: geopharmacology, pharmaceutical, balneotherapy

Date of Submission: 05-09-2024

Date of Acceptance: 15-09-2024

I. Introduction:

Geography is a comprehensive and multidisciplinary subject, which is studied in globally. Research has shown that, health geography has a unique and exclusive place in the study of geography. This research presents a new branch of study called geopharmacology, which is being introduced for the first time by researchers. The research highlights the importance of Unapdev hot water spring in terms of their therapeutic properties and potential for balneotherapy. [1] Previous research has been studied hot spring of Unapdev and Anak dev for geothermal and thermo stable enzymes, Phytonic diversity, alkaline protease production and recreational as well as tourist point of views. [2]

Objectives:

- To review Balneotherpetic knowledge of Unapdev hot spring.
- To search the GIS location of Unapdev hot spring in Khandesh.
- To examine the geopharmacological properties of Unapdev hot spring water.
- To predict a future potentiality of balenotherapy centre at Unapdev for human well being.

Hypothesis:

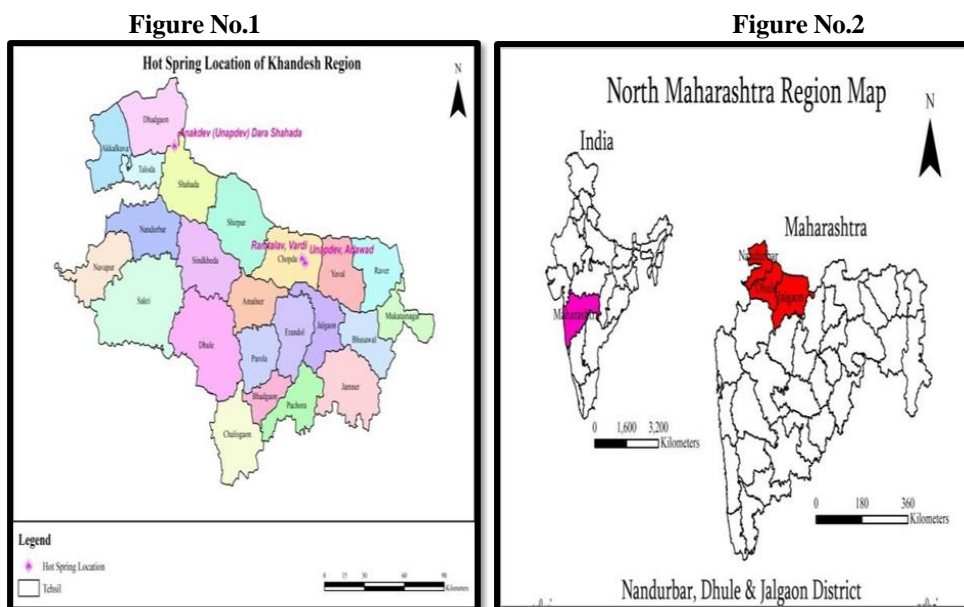
Geopharmacological components of hot springs are useful for human beings health-hygiene and Balenotherapy.

II. Research Methodology:

In the present study, the researcher did normative survey of hundred citizens at Chopda tahsil by using

purposive sampling method and it is also used document analysis and laboratory method to find out physical as well as chemical characteristics of hot springs water and their views.

Sample site: This study focuses on the hot water springs in the Khandesh region of Maharashtra, India, specifically in the districts of Jalgaon. Hot spring is located at Unapdev near to Adawad village of Chopda Tahasil (21°15'57"N 75°25'52"E)



Sampling of Unapdev hot springs:

The in situational temperature of hot springs water of Unapdev is 58.0°C. The hot springs water sample was collected in sterile conical flasks aseptically. [3] By using standard sampling protocols and were immediately transported to the Department of Microbiology laboratory.

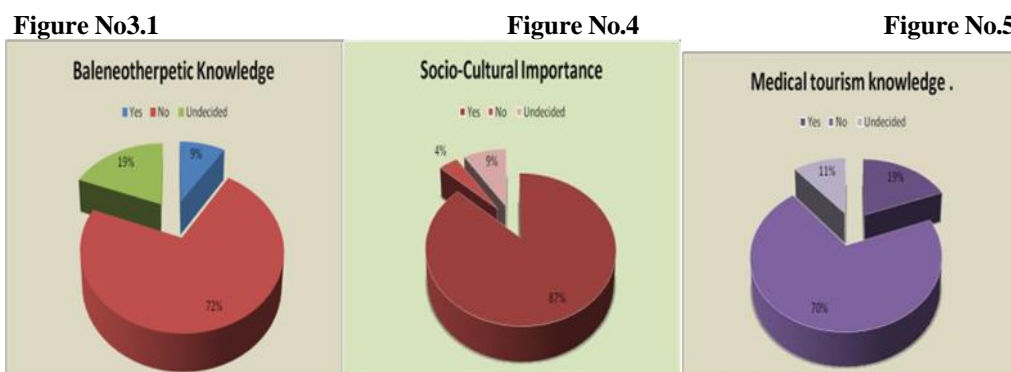
III. Results And Discussion:

On the basis of attitude about balneotherpetic and medicinal knowledge of common people of hot spring water in Unapdev. Geopharmacological reviews show that, the hot spring water in Unapdev has highly potential for the development of Balneotherapy centre. [4]

Table: 1: Review knowledge of balneotherpetic of common people.

Components	Yes	No	Undecided
Balneotherpetic Knowledge (Rural & Tribal)	09%	72%	19%
Socio-Cultural Importance	87%	04%	09%
Medical tourism knowledge.	19%	70%	11%

Source: Surveyed by researchers, 2023



Source: Computed by researchers, 2023

Knowledge of Balneotherapy (Rural & Tribal): Of the respondents, 9% knew about Balneotherapy, 72% didn't know about it, and 19% weren't sure. Thus, research indicates that both in rural and tribal communities, there is a significant knowledge gap. The socio-cultural significance of hot spring is the second component's evidenced by the overwhelming, 87% of respondents who agree with the socio-cultural importance of balneotherapy and the 9% who are undecided, there is widespread agreement regarding its usefulness. Figures show a notable lack of understanding of medical tourism, as seen by the startling, 19% of respondents who know something about it, 70% who didn't know and 11% who weren't sure. [5] Unapdev hot spring is situated at 21° 16'North latitude: and 75° 26'East longitude.

Figure No.6



Source: Search by researchers, 2023

On the basis of physical as well as chemical properties and their analysis of Unapdev hot spring, temperature is 58.0°C. Hot springs categories as hyperthermalhot springs on the other hand pH was recorded 7.65 respectively, with salinity as 138. So hot spring of Unapdev came under as alkaline hot spring in nature [6]

Table No. 1: Physical prosperities of Unapdev hot spring

Hot springs in Khandesh	Temperature °C	pH	Salinity
Unapdev HS1(UHS1)	58	7.65	138

Source: Computed by researchers.2023

Table No. 2: Chemical prosperities of Unapdev with to WHO and other countries

Parameter	WHO (mg/L)	USA (mg/L)	EU (mg/L)	New Zealand (mg/L)	Australia (mg/L)	Japan (mg/L)	India (mg/L)	UHS (mg L)
Chloride	250	250	250	250	250	250	250	72
Phosphate	---	0.025	0.1	0.05	0.1	0.1	0.1	0.21
Sulphate	500	N.S	250	N.S	N.S	N.S	400	42
Calcium	75	N.S	200	N.S	N.S	N.S	75	22.05
Magnesium	30	N.S	50	N.S	N.S	N.S	30	15.2
Sodium	200	N.S	200	N.S	N.S	N.S	200	147.5
Potassium	----	N.S	12	N.S	N.S	N.S	N.S	3.7
Fluoride	0.6-1.5	4	1.5	1.5	1.5	1.5	1.5	0.112
Iron	0.86	0.3	0.2	0.2	0.3	0.3	0.3	Nil
Chromium	0.005	0.1	0.5	0.05	0.05	0.05	0.05	Nil
Manganese	Nil	0.05	0.5	0.08	0.1	0.05	0.1	Nil

Source: Computed by researchers, 2023

Therapeutic as well as biological importance assigned by same previous studies on hot springs. Heavy metals are natural elements of natural waters and some of them like iron, manganese are biologically important in the aquatic environment when present at low concentrations [7]

[8] Heavy metals may enter waters from various sources, for instance, the weathering of rocks and soil. Human activity due to farming, mining, secondary and tertiary activities are the source of heavy metals in the waters. Novel studies have revealed that heavy metals in low concentrations are important for many metabolic and cellular activities of bacteria but at higher concentrations, they become cytotoxic to the bacteria and affecting the growth, morphology, metabolic properties and activities. [9] Suggest that the hot springs are suitable for balneotherapy, offering therapeutic benefits without significant heavy metal contamination. Balneotherapy utilizing these hot springs may promote relaxation, improve circulation, and alleviate musculoskeletal ailments, providing holistic healing experiences for individuals seeking natural remedies. Therefore future potentiality of Balneotherapy centre will be developing for human health at Unapdev hot spring [10]

IV. Conclusion:

The perceptions of rural and tribal populations toward medical tourism and balneotherapy are significantly by research on the potential applications of balneotherapy in the future. The socio-cultural significance of balneotherapy is widely acknowledged, little is known about the field. The ignorance of people regarding medical tourism. Study recommended that communities be educated about the benefits and advantages of both medical tourism and balneotherapy through targeted educational programs, which aim to close these knowledge gaps. Prime core knowledge can be shared with tribal and rural communities, enhancing their socioeconomic and medical circumstances [1]. Therefore, present study reveals and higher potentiality at Unapdev hot spring. It can be future hub for balneotherapy as well in health tourism province in India.

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