

## Qualitative phytochemical characterization of Haridra Ghana containing Herbal Bandage

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**ABSTRACT:** Ayurveda is an ancient medical treatise brief art of healing and extend life. The Ayurvedic herbs are most effective in extend the body resistance and are used in the treatment of many disorders. Haridra (*Curcuma longa* Linn.) is one of the most constructive herbal remedial plants and used as a remedy of Kushtagha, Krimighna, Varnya, Vishaghna and Pramehanashak. A bandage is a piece of material additionally to support a medicament such as dressing, or on its own to provide support to the body, basically uses for the healing purpose of the body. Bandages are Non-Implantable materials used for external usage on the body. Herbal bandage is produced completely with herbal extractions, without using any kind of chemicals and directly applied to the bandage so that the medicinal quality of the herbs can be kept intact. Herbal bandage has the capability to save us from many skin diseases, provides relief from viral infected disease. The medicinal properties of herbs are known to cause no damage to the human body.

**KEYWORDS:** Ayurveda, Haridra, Bandage, Herbal extraction

### I. INTRODUCTION

The word “bandage” is many times used to mean a dressing, which is used directly on a wound, but a bandage is technically only used to keep a dressing and not directly on a wound. Wound healing is a multistage process which involves: inflammatory stage, cell proliferation and remodeling stage<sup>(1,2)</sup>. The gauze and bandage fabric are extremely essential in health care issues. It basically uses for the healing purpose of the body. Bandages are Non-Implantable materials used for external usage on the body and may or may not make connection with skin. An ideal bandage should have such properties like, keep a moist surround around the wound, allows diffusion of gases, removes exudates, secure wounds to microorganism and does not pollute the wound with foreign particles, non-allergic, comfortable in changing, cost effective etc. In order to heal the wounds more effectively, herbal forms of bandage can be used. Medicinal plants contain various phytoconstituents which in single or in combination exert therapeutic efficacy for numerous diseases<sup>(3)</sup>. It has been observed that plants were used as first line therapy for inflammation, wound healing etc. from prehistoric period. These plants consist of various bioactive properties for healing, remodeling and regeneration of skins and other body tissues.

The Ayurvedic herbs have many medicinal qualities and when they are combined with the textile, it gives cooling and effective results. They are boon for various skin disorders, asthma, rheumatic, body ache, diabetes, blood pressure, skin infections and allergies. In touch with herbal bandage, the skin takes up the medicinal properties of the herbs. In contemporary years, plant materials mainly Ayurvedic herbs experienced sustained growth in the world market. Further, the World Health Organization (WHO) has emphasized ensuring the agreement on medicinal plant merchandise by employing ultra-modern strategies and applying suitable specifications<sup>(4)</sup>. In this study we used Haridra (*Curcuma longa* Linn.) or turmeric as a herbal components for the development of herbal bandage. The active constituents of turmeric are the flavonoids among them curcuminoids which is a combination of curcumin (diferuloylmethane), monodemethoxycurcumin and bisdemethoxycurcumin formulates upto approximately 90% of the curcuminoid. Other component includes sugars, proteins, and resins<sup>(5)</sup>. The anti-inflammatory property is exhibited due to the chief coloring component present in turmeric<sup>(6)</sup>. Curcumin acquire wide array of pharmacological activities including anti-inflammatory<sup>(7)</sup>, anti-cancerous<sup>(8)</sup>, anti-oxidant<sup>(9)</sup>, anti-microbial effects<sup>(10)</sup> and used in gastrointestinal and respiratory disorders<sup>(11)</sup>. Curcuminoids exhibit free-radical scavenging properties, anti-oxidant activity<sup>(12-15)</sup>. Curcumin is an effective anti-inflammatory with precise lipoygenase- and COX-2- restraining properties. It decreases both acute and chronic inflammation which has been confirmed by its *In vitro* and *in vivo* studies<sup>(16)</sup>.

### II. MATERIALS AND METHODS

**Collection of Raw Material :** The herbal drug sample, Haridra was procured from local medicinal drug market GolaDeenanath, Varanasi.

**Authentication of Drug:** Samples was pharmacognostically identified and confirmed in *Department of DravyaGuna*, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University.

**Preparation of Herbal Bandage :**The pharmaceutics of *Haridra Ghana and Herbal Bandage* was carried out in *Department of Rasa Shastra&BhaishjyaKalpana*, Faculty of Ayurveda, Institute of Medical Sciences, Banaras Hindu University. It includes preparation of HaridraKwatha<sup>(17)</sup>, preparation of Haridra Ghana<sup>(18)</sup> and preparation of Herbal Bandage.The foreign material from the raw material was separated manually. After cleaning, the drug was dried in indirect sunlight, and then coarse powder was done for the preparation of HaridraKwatha. HaridraKwatha and Haridra Ghana was prepared with the reference of our Ayurvedic classics. Finally prepared Ghana was equally spread on the Gauze bandage and allowed for drying manually after that it cut into 5X5 cm sample size kept in autoclave at 121<sup>0</sup>c to eradicate microorganisms of around 15-20 minutes for sterilization and sealed properly in sterilized packets.

**Qualitative Analysis :**The analysis of drug was done as per the reference provided by API & PLIM protocol for Haridra Ghana and Herbal Bandage.

**Organoleptic Analysis**<sup>19</sup> :Organoleptic analysis is an important tool to study the morphological characters of Haridra Ghana, which involves the color, taste, smell and texture and confirms the quality check of the drug. It is smooth, bright yellow with aromatic odor and characteristic taste.

**Physicochemical Analysis**<sup>19-21</sup> :The physicochemical analysis of Haridra Ghana was done by following the standard methods for estimation of loss on drying, total ash, acid-insoluble ash, water-soluble extractive value, alcohol- soluble extractive value and determination of heavy metals and tabulated in table no 1 & 2.

**Table 1: Physicochemical analysis test of Haridra Ghana**

S. No.	Analytical test	Result
01.	Loss on drying at 105 <sup>0</sup> C	04.05%
02.	Total Ash value	8.7%
03.	Acid insoluble Ash.	0.8%
04.	Water soluble extractive value	23.1%
05.	Alcohol soluble extractive value	11.8%

**Table 2: Heavy metal analysis of Haridra Ghana**<sup>22</sup>

S. No.	Heavy Metal	Values (ppm)
01.	Arsenic (As)	0.0194
02.	Cadmium (Cd)	0.0028
03.	Lead (Pb)	0.0234
04.	Mercury (Hg)	0.0036

**Qualitative Phytochemical Analysis by Thin Layer chromatography :**It is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. The separation of compound depends on the relative affinity of compounds towards stationary and mobile phase. The compound travels under the influence of mobile phase (driven by capillary action) over the surface of stationary phase. During this movement the compounds with higher affinity to stationary phase travels slowly while the others with less affinity towards stationary phase, travels faster. Thus separation of components in the mixture is achieved and the separated components appear as different coloured spots on the plate indicating the presence of different phytoconstituents. The developed TLC spots were visualized in normal daylight and under ultraviolet (UV)-visible light at 254nm and 365nm. ThePhytochemicals present in the sample of *Haridra Ghana* travel under the influence of mobile phase (driven by capillary action) over the surface of stationary phase. The separated components were visualized as different coloured spots and colour of spot was corresponds to presence of different phytoconstituentsin figure no1.

**PhytoconstituentScreening**<sup>23</sup> :The hydroalcoholic extract of Haridra Ghana is used as a test solution for phytochemical screening. Different methods are employed for the detection of phytoconstituents viz. alkaloids, flavonoids, proteins, saponins, tannins, glycosides and free amino acids tabulated in table no 3.

**Table 3: Phyto-constituents Analysis of Haridra Ghana**

S. No.	Phyto-constituent	Finding
01.	Alkaloids	-ve
02.	Flavonoids	-ve
03.	Free amino acids	-ve
04.	Glycosides	-ve
05.	Proteins	+ve
06.	Saponins	+ve
07.	Tannins	-ve

**Textile testing :**It is the term for a full series of tests that examine the physical, mechanical and chemical qualities of textiles. Testing is done while textiles are being manufactured, to identify problems in the machinery making them, and to double-check that materials being used for a specific textile are appropriate. All textile testing of Gauze Bandage and Herbal Bandage were done at NTRA Powerloom Service Center, Testing Lab (Linked to Ministry of Textile, Govt. of India) Chaukaghat, Varanasi and tabulated in table no 4 & 5.

**Table 4: Description-Fabric Sample without treatment**

S. No.	Test Parameter		Test Method	Test Result	
				Wrap wise	Weft wise
01.	Fabric Tensile Strength	Force (kg)	IS: 1969-1985	12.0	9.7
		Elongation (%)		13.0	14.3
02.	Fabric tear strength (gms)		IS: 6489-1990	2176	1984
03.	Thread Density		IS:1963-81	Ends/Inch (EPI)-28	
				Ends/Inch (PPI)-25	
04.	Tchikness of Fabric(mm).		IS:7702-1975	0.39	
05.	Fabric Mass:GSM(gm/m2)		IS:1964-01	46.9	
06.	Drape Co-efficient (%)		IS:8357-1997	2.4	

**Table 4: Description-Fabric Sample with treatment**

S. No.	Test Parameter		Test Method	Test Result	
				Wrap wise	Weft wise
01.	Fabric Tensile Strength	Force (kg)	IS: 1969-1985	12.5	9.7
		Elongation (%)		12.0	14.3
02.	Fabric tear strength (gms)		IS: 6489-1990	640	512
03.	Thread Density		IS:1963-81	Ends/Inch (EPI)-28	
				Ends/Inch (PPI)-25	
04.	Tchikness of Fabric (mm).		IS:7702-1975	0.55	
05.	Fabric Mass: GSM(gm/m2)		IS:1964-01	290.4	
06.	Drape Co-efficient (%)		IS:8357-1997	44.4	

### III. DISCUSSION AND CONCLUSION

Herbal bandage is produced completely with herbal extractions, without using any kind of chemicals. Herbal bandage has the capability to save us from many skin diseases, provides relief from various infected diseases.

The medical properties of herbs are known to cause no damage to the human body<sup>(24-28)</sup>. Safety of herbal medicines is always being a concern for physicians as well as researchers<sup>(29,30)</sup>. Several classical dosage forms are also cited in literature and recent decades have witnessed development of many new ones<sup>(31-35)</sup>. Anonymous herbs have natural vigorous material whose substance delicately corrects basic deficiencies. These Ayurvedic herbs are most effectual in extend the body resistance and are used in the treatment of many disorders<sup>(36-40)</sup>. Natural ingredients are more effective in comparison to synthetic, as natural sources includes various healing as well as pharmacological factors which may be directly or indirectly benefit the skin<sup>(41-43)</sup>. Plant derived extracts are cheaper alternatives in comparison to synthetic drugs. It might increase the efficiency of the healing property for various alternatives and may show beneficial results. Skin is one of the most presentable organs of the human body. It has a definite job in everyone's personality. Hence skin disorders affect not only on physical level but also on a psychological level. Ayurvedic herbs and herbal medicament play a key role in curing skin disorders.

Qualitative analysis by the TLC method and quantitative analysis by UC spectroscopy proved the presence of proteins, saponins in Haridra Ghana. The analysis of heavy metals was studied in Haridra Ghana shows the presence within normal limits as per Ayurvedic Pharmacopoeia guidelines. The textile tests for bandage are physical tests, mechanical tests, breaking strength, tearing strength and abrasion tests. Such tests make sure that fabric used in production of bandage is safe and good quality. A gauze bandage is thin, woven medical bandage that is used to shield the wound or cover the affected parts of skin with medicaments. In this way an herbal bandage is a very useful for various skin disorders.

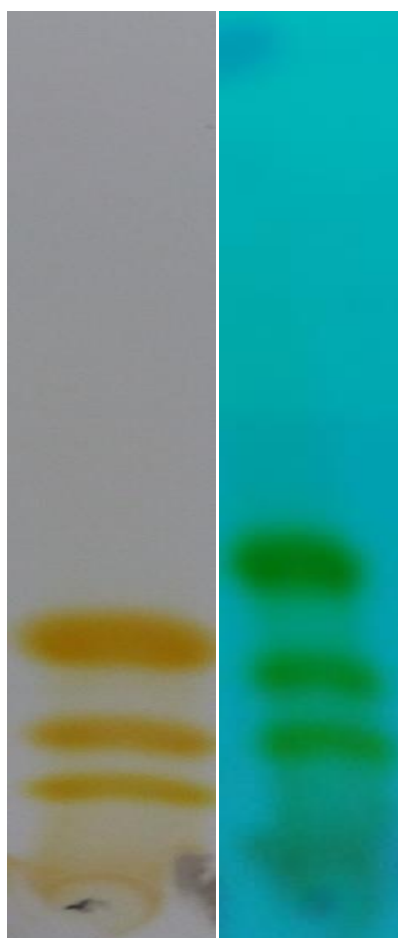
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Figure No. 01. Thin layer chromatography of Haridra Ghana



Normal Light    UV spectrum 254nm