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# Phytochemical Analysis of Drugs used in Herbal Crack Cream

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**Abstract:** Skin diseases are numerous and a frequently occurring health problem affecting all ages from the neonates to the elderly and cause harm in number of ways. If the cracks in the heels are deep, they can be painful, hurting when a person stands up, and they may sometimes bleed. Some wild plants and their parts are frequently used to treat these diseases. Herbal crack cream contains the extracts of the plant consists of five ingredients viz., extract of Daruharida (*Berberis aristata* DC.), Pashanbheda (*Bergenia ligulata* (Wall.) Engl.), Jivanti (*Leptadenia reticulata* W. & A.), kampilak (*Mallotus philippensis* Muell.-Arg.), Manjistha (*Rubia cordifolia* Linn.) were used for the phytochemical analysis to find out the phytochemical constituents in the plants. The main objective of the research work was to check the presence or absence of the phytochemical constituents in all the selected medicinal plants and formulated cream. The results of the phytochemical analysis of medicinal plants and formulated cream showed that the tannins, flavonoids and alkaloids were found to be present.

**Keywords:** Phytochemical screening, herbs, medicinal plants, skin disease, TLC.

## I. INTRODUCTION

The skin is the largest organ of the body, with a total area of about 20 square feet. Skin has three layers: The epidermis, the outermost layer of skin, provides a waterproof barrier and creates our skin tone. The cosmetics are the utility product used extensively throughout the world for maintaining and improving general appearance of face and other part of body e.g. skin, eye, hair, hand, etc. herbal cosmetics are the preparation which represent cosmetics associated with active bio-ingredients, nutraceuticals and pharmaceuticals. Cosmetics are products that are used to cleanse and beautify the skin. The first recorded use of cosmetics is attributed to Egyptians in 4000 B.C. Pharmaceuticals are essentially drug products and are defined as products that prevent, mitigate, treat or cure disease and affect the structure or function of the body. The skin underneath your feet is often dry, rough and chapped. Disorders - Athlete's foot, psoriasis, eczema, thyroid disease, diabetes and some other skin conditions can be the cause of cracked heels. Maintaining healthy skin is important for a healthy body. Natural treatment is cheap and claimed to be safe. A review of some plants for the treatment of skin diseases is provided that summarizes the recent technical advancements that have taken place in this area during the past 17 years. It is also suitable raw material for production of new synthetic agents.

The literature in ayurveda, especially charak samhita stated numerous medicinal plant in varnya kashaya. The herb like chandun, haldi, khas, nagkeshara, manjistha, yastimadhu, are used to obtained glowing complexion and arusa, amla, bavchi, guduchi, chakmard are mentioned as kustaharan. Herbs like amalaki, haridra, khadira, vidyanga, jati saptaparna, karavira of various potential from khshthagha and mahakashiya are mentioned effective in skin disorder. Herbs used in cosmetics preparation have varieties of properties like Antioxidant, Anti-inflammatory, Antiseptics and Antibacterial etc<sup>[1-5]</sup>.

## II. MATERIAL AND METHODS

### A. Collection of Raw Material

Herbal crack cream consists of six ingredients viz., extract of *Berberis aristata* DC., *Bergenia ligulata* (Wall.) Engl., *Leptadenia reticulata* W. & A., *Mallotus philippensis* Muell.-Arg. *Rubia cordifolia* Linn., *Sesamum indicum* Linn.

The extracts of *Berberis aristata* DC., *Bergenia ligulata* (Wall.) Engl., *Leptadenia reticulata* W. & A., *Mallotus philippensis* Muell.-Arg. *Rubia cordifolia* Linn., *Sesamum indicum* Linn. were procured from Amsar Private Limited, Indore, India. While Herbal crack cream formulated by me in ICPA health product Ltd., Ankleshwar, India. All the extracts used in Herbal crack cream. All these plant's extract were identified and authenticated by Dr. (Mrs) C.R. Bhatt, Analytical chemist, Amsar Private Limited, Indore.

All the reagents and instruments used in Formulation & standardization for Herbal crack cream were facilitated by ICPA Research Centre- A division of ICPA health product Ltd., Ankleshwar and A.R Collage of Pharmacy & ISTAR, Vallabh Vidhyanagar.

### B. Evaluation of Quality Control Parameters for Raw Material<sup>[6-18]</sup>

1) *Organoleptic Parameters:* Organoleptic parameter like colour, odour and taste of all extracts were carried out. These parameters helped in visual identity of drug extract which were derived from plant by various extraction procedure.

### C. Qualitative Phytochemical Evaluation

Qualitative chemical tests for identifying various phyto-constituents present were carried out on extracts present in Herbal crack cream follows<sup>89, 90, 91</sup>.

#### 1) Tests for Alkaloids

- a) *Mayer's Test:* (Potassium mercuric iodide solution): To extract/sample solution, add few drops of Mayer's reagent, creamy white precipitate was produced.
- b) *Dragendroff's Test:* (Potassium bismuth iodide solution): To extract/sample solution, add few drops of Dragendroff's reagent, reddish brown precipitate was produced.
- c) *Wagner's Test:* (Solution of Iodine in Potassium Iodide): To extract/sample solution, add few drops of Wagner's reagent, reddish brown precipitate was produced.

#### 2) Tests for Glycosides

- a) *General Test:* Extract 200 mg of the drug using 5 ml of dilute (10%) sulphuric acid and boil on water bath. After boiling add equal volume of water to the volume of NaOH used in the above test. Add 0.1 ml of Fehling's A and B until alkaline (red litmus changes to blue) and heat on water bath for two minutes. Note the quantity of the red precipitate formed represents the glycoside after acid hydrolysis.
- b) *Cardiac Glycosides (Keller-kiliani Test):* The sample drug was treated with 1ml mixture of 1 volume of 5% FeCl<sub>3</sub> solution and 99 volume of glacial acetic acid. To this solution few drops of concentrated H<sub>2</sub>SO<sub>4</sub> was added. Appearance of greenish blue color within few min. indicated the presence of cardiac glycosides.
- c) *Anthracene Glycosides (Borntrager Test):* Boil 200 g of the test material with 2 ml of dilute H<sub>2</sub>SO<sub>4</sub> in test tube for 5 min centrifuge or filter while hot, take supernatant/filtrate, cool and shake with an equal volume of dichloromethane. Separate the lower dichloromethane layer and shake with half its volume of dilute ammonia. A rose- pink to red colour indicated the presence of anthracene glycosides.

#### 3) Tests for Flavonoids

- a) *Shinoda Test: (Magnesium Hydrochloride Reduction Test):* To the extract solution add few fragments of magnesium ribbon and concentrated Hydrochloric acid drop wise, pink scarlet or crimson red colour appeared after few minutes.

#### 4) Test for Saponins

- a) *Frothing Test:* The sample drug was vigorously shaken with distilled water and was allowed to stand for 10 minutes and classified for Saponin content as follows: Stable froth more than 1.5 cm indicated the presence of Saponin.

#### 5) Test for Tannins

- a) *With FeCl<sub>3</sub>:* The water extract of the sample drug was treated with alcoholic FeCl<sub>3</sub>. Blue colour indicated the presence of tannins.
- b) *With Lead Acetate:* With 5% lead acetate solution tannins gave precipitate which turned red on addition of KOH solution on excess addition precipitate was dissolved.

#### 6) Tests for Sterols and Triterpenoids

- a) *Libermann-Burchard Test:* Extract treated with few drops of acetic anhydride, boil and cool, concentrated sulphuric acid was added from the side of the test tube, A brown ring at the junction of two layers and the upper layer turns green indicated the presence of sterols and formation of deep red colour indicated the presence of triterpenoids.
- b) *Salkowski's Test:* Treat extract in chloroform with few drops of concentrated Sulfuric acid, shake well and allow to stand for some time, red colour appeared in the lower layer indicated the presence of sterols and formation of yellow coloured lower layer indicated the presence of triterpenoids.

### D. Identification by TLC Method<sup>[8,9]</sup>

TLC is based on absorption chromatography.

TLC is an important analytical tool for qualitative and quantitative analysis of a number of natural products

Here proper stationary phase and mobile phase is used to identify main constituent in extract.

Methanol was used as solvent. Silica gel was used as stationary phase.

### III. RESULT AND DISCUSSION

#### A. Identification and Authentication of Plants

Herbal crack cream contains the extracts of the plant consists of five ingredients viz., extract of Daruharida (*Berberis aristata* DC.), Pashanbheda (*Bergenia ligulata* (Wall.) Engl.), Jivanti (*Leptadenia reticulata* W. & A.), kampilak (*Mallotus philippensis* Muell.-Arg.), Manjistha (*Rubia cordifolia* Linn.).

These plants were organoleptically and morphologically identified and authenticated by Dr.(Mrs) C.R. Bhatt, Analytical chemist, Amsar private limited, Indor.

Table 1: Organoleptic characters of extract present in Herbal crack cream:-

Sr no	Name of the Extracts	Parts Used	Description		
			Colour	Odour	Taste
1	Daruharidra	Entire plant	Dark Brown	Characteristic	Bitter
2	Pashanbheda	Root	Blackish brown	Characteristic	Bitter
3	Kampilak	Powder	Reddish brown	Characteristic	Bitter
4	Manjistha	Root	Dark Brown	Characteristic	Bitter
5	Jivnti	Entire plant	Dark Brown	Characteristic	Bitter

Results indicates that extract of Daruharidra, Pashanbheda, Kampilak, Manjistha, Jivanti have Dark brown, Blackish brown, Reddish brown, Dark brown and Dark brown respectively. All the ingredients have characteristic odour. These all extracts have bitter taste.

#### B. Evaluation of Quality Control Parameters for raw Material

##### Qualitative Phytochemical evaluation

All the ingredients are subjected for the various phytochemical tests. Results are given in Table.

Table 2: Qualitative phytochemical tests of ingredients present in Herbal crack cream:-

Sr no.	Test	DE	PE	KE	ME	JE
1	Alkaloid					
	Mayer	+	-	-	-	+
	Wagner	+	-	-	-	+
	Dragondroff	+	-	-	-	+
2	Glycoside					
	General	-	-	-	-	+
	Cardic	-	-	-	-	-
	Anthraquinone	-	-	-	-	+
3	Flavonoid					
	Shinoda	-	-	-	-	+
4	Tannin					
	With Fecl3	-	+	-	+	-
	With lead acetate	-	+	-	+	-
5	Saponin					
	Froth test	-	-	-	+	+
6	Steroid/Terpenoid					
	Lieberman buchard	-	+	-	-	+
	Salko-waski	-	+	-	-	+

DE: Daruharidra extract, PE: Pashanbheda extract, KE: Kampilak extract, ME: Manjistha extract, JE: Jivanti extract, KE: Karavella extract, (+): presence and (-): absence.

Results indicate that Daruharidra extract contains alkaloids. Pashanbheda extract contains tannins and terpenoids. Kampilak extract contains Resins and terpenoids. Manjistha extract contains glycosides, saponins and terpenoids. Jivanti extracts contains glycosides, tannins, saponins and terpenoids. Jivanti extract contains alkaloids, saponins, flavonoid and terpenoids.

C. Identification by TLC

Table 3: TLC of ingredients present in Herbal crack cream:-

Drug Extracts	Main constituent	Solvent	Stationary phase	Mobile phase	Detection	No of Spot	Colour of Spots	Rf Values
Daruharidra	Berberin	Methanol	Silica gel	Toluene:ethylacetate:formic acid: methanol (3:3:0.8:0.4)	366nm UV	6 spots	Blue	0.26, 0.31, 0.37, 0.59, 0.69, 0.78
Pashanbheda	Gallic acid	Methanol	Silica gel	Toluene:ethylacetate:formic acid: methanol (3:3:0.8:0.4)	280nm UV	3 spots	Blue	0.89, 0.87, 0.88
Kampilak	Rottaline	Methanol	Silica gel	Chloroform: ethylacetate (8:2)	Normal light	3 spots	Yellow	0.43, 0.75, 0.96
Manjistha	Tannin	Methanol	Silica gel	Toluene:ethylacetate:formic acid (1:1:0.1)	373nm UV	3 spots	Green	0.35, 0.36, 0.35
Jivanti	Flavanoid	Methanol	Silica gel	Toluene:ethylacetate:formic acid((1:1:0.1)	260nm UV	3 spots	Black	0.66, 0.71, 0.65

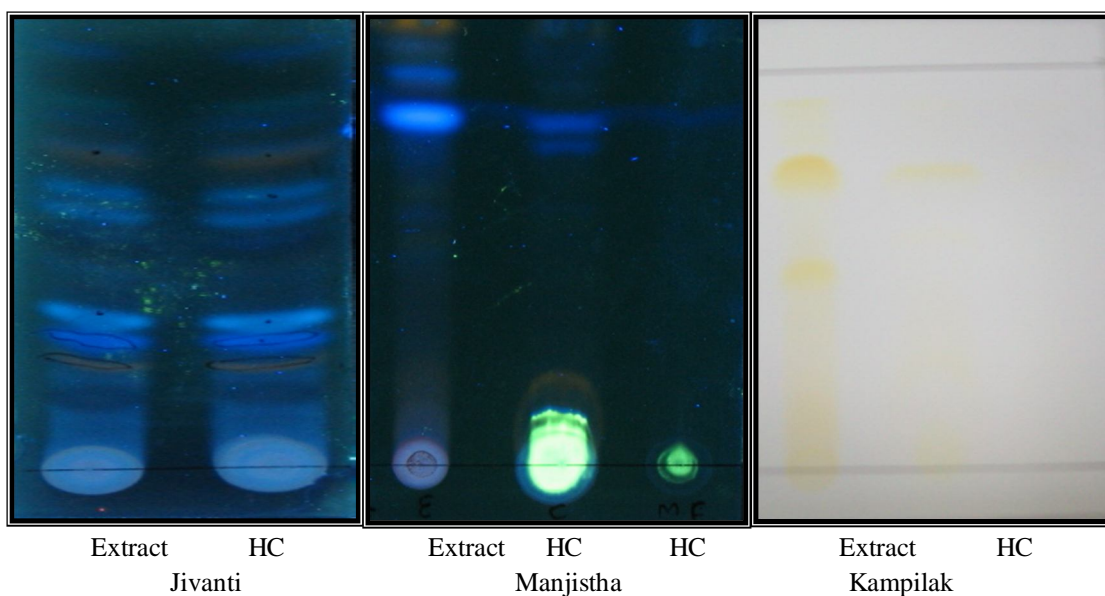


Fig.1. TLC of Jivanti, Manjistha and Kampilak

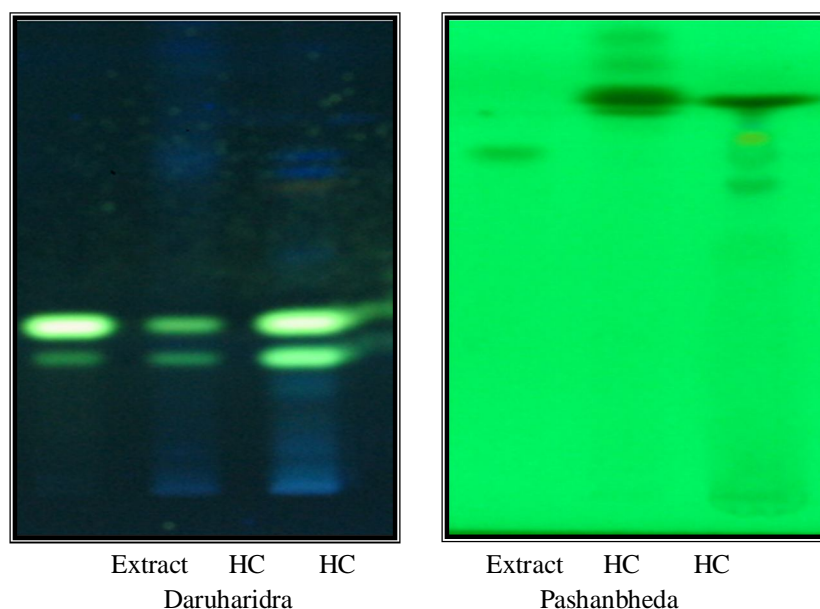


Fig.2. TLC of Daruharidra & Pashanbheda

#### IV. SUMMARY AND CONCLUSION

Phytochemical screening and TLC used to determine the present of main constituents in extract as well as in formulated herbal crack cream.

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