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DEVELOPMENT OF COLD CREAM CONTAINING *HOUTTUYNIA CORDATA*, BABCHI SEEDS WITH ANTIOXIDANT AND ANTIMICROBIAL PROPERTIES

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ABSTRACT:

Herbal products were used to make creams for this study, and they were tested. Some plant parts are dried and then removed with 70% alcohol through a process called maceration. Several different evaluation methods were used to rate the quality of the goods. The pH was in the right range, and there was no change in the physical features. During this study period, the mixtures were smooth, hadn't separated into phases, and were easy to spread. It was found that as the rate of mixing goes down, the cream's viscosity goes up. In other words, the cream's rate of split (rpm) goes down as its thickness goes up. After 24 hours at 37°C, it was the same as the control, and there were no signs of bacteria growing.

Keywords: Houttuynia Cordata, Babchi Seeds, Antioxidant, Antimicrobial Properties

INTRODUCTION:

A traditional Chinese medicine called *Houttuynia Cordata Thumb*., or H. cordata, is good for your health in many ways. It comes from the Saururaceae family and grows back every year. The H. cordata species lives in China, Japan, Korea, and Southeast Asia, where there are lots of hills.It is also known as Chinese lizard tail, fish wort, chameleon plant, or heartleaf. Along the Himalayas, between 300 and 2600 m above sea level, it grows. This plant, H. cordata, has strong antioxidants that protect blood vessels, boost the immune system, and keep you from getting scurvy. This plant has proteins that help the body use nutrients better, burn more calories, and keep people from getting fat. Some of these proteins are glutamic acid, aspartic acid, isoleucine, and leucine. They just found out that H. cordata can help fight breast cancer [8-13].

There is a very important plant called Psoralea corylifolia that is used in many traditional medicines to treat a lot of different illnesses. The plant babchi, also known as Psoralea corylifolia, is used in Chinese, Indian, and Tamil Siddha treatment. It can fight free radicals, kill fungi, fight sadness, fight tumors, and change the immune system. Babchi seeds contain a precious oil.5.5% terpenoid oil that doesn't evaporate easily, 8.6% dark brown resin, 10.0% brown steady oil, raffinose, coumarin compounds, albumin, sugar, 7.5% ash, and a small amount of manganese. Products with psoralen and is psoralen have healing power. They are treated for Bars Leukoderma, psoriasis, leprosy, pityriasis, pharyngitis, and worms in the guts [4-7].

Figure 1: *Houttuynia Cordata* leaves and Babchi seed

MATERIALS AND METHODS-

Materials:

Babachi seed, Houttuynia Cordata,Collagen powder, Stearic acid, Sodium hydroxide, tri ethanaloamine, EDTA,methyl paraben,Glycerin,mineral oil

Aqueous phase –

Glycerine, methyl paraben, deionised water

Oil phase-

Steric acid, cetyl alcohol, mineral oil

Method of preparation:

Methanolic Extrction of Babchi Seed and *Houttuynia Cordata*:

We dried the babachi seed and leaves of Houttuynia Cordata in a 40°C oven for 48 hours and then used a mixer to make a coarse powder. The Soxhlet extraction method was used to separate the dried powder of Babachi seed and Houttuynia Cordata. Each was treated with methanol. A) Houttuynia Cordata leaves and B) Babchi seeds are shown in Figure 2.

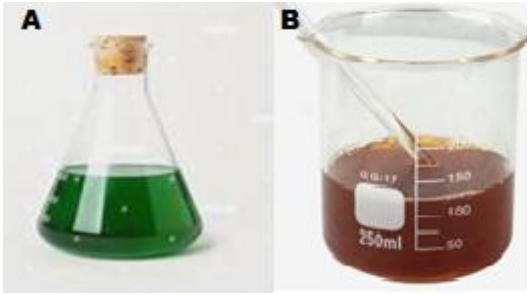

Figure 2: Extractof A) *Houttuynia Cordata* leaves and B) Babchi seeds

Method of Prepration of Cream:

A mixture of oil and water (O/W) was used to make a cream that doesn't melt all the way. As the oil phase (Part A) gets hotter, mix it with stearic acid. This moves the oil around so it can mix with other things. Part B is liquid water. It was boiled to 75 °C, and then the inhibitors and other parts that dissolve in water were added. Some of the water phase was added to the oil phase while it was still boiling, and the mixture was constantly stirred. As it got cooler, it smelled like perfume [14–18]. Using Babchi seeds and Houttuynia Cordata leaves, Figure 3 shows how to make cold cream. Table 1 lists the things that you will need to make a cold cream with Babchi seeds and Houttuynia Cordata leaves.

Figure3: Cold Cream Preparation using *Houttuynia Cordata* leaves and Babchi seeds

Table1: Formulation table of cold cream containing *Houttuynia Cordata* leaves and Babchi seeds

Components **Active ingredients**	**Formulation 1** **[F1]**	**Formulation** **[F2]**
Babachi extract	1 gm	2 gm
Houttuynia Cordata extract	1 gm	2 gm
Collagen powder	1 gm	2 gm
Oily phase		
Stearic acid	7.5 gm	8.5 gm
Cetyl alcohol	2.5 ml	3.5 ml
Mineral oil	20.5 ml	21.5 ml
Aqueous phase		
Glycerine	10.5 ml	11.5 ml
Methyl paraben	O.1 ml	0.2 ml
EDTA	0.2 gm	0.3 gm
Triethanolamine	0.5 ml	0.6 ml
Deionised water (Q.s)	(Q.s) 100%	(Q.s) 100%

Evaluationofcream:

Emulsionunderdyetest

The scarlet red dye and the cream are mixed together. An extremely small slide was put on top of a cover slip that had a drop of the cream on it. The slide was then scrutinized with a

magnifying glass. The cream is O/W type if the base is clear and the floating globules look red [19].

Antioxidant activity:

It was tested to see how well the ethanol extract could get rid of 2, 2-Diphenyl-1-picrylhydrazyl (DPPH) radicals using a method that had already been reported. 2 mL of a DPPH solution in methanol (100 mmol/L) was mixed with ethanol to make a test sample. Various amounts of ethanol (40–200 µg/mL) were added for the test. Benzene was added to the same amount to each group. The absorbance at 517 nm was recorded after 5, 15, and 30 minutes. Ascorbic acid was used as a standard. Figure out the scavenging action by using this method:

$$\% \text{ Scavenging action} = [(A517_{control} - A517_{sample}) / A517_{control}$$

pH-

Set the pH meter with a normal buffer solution. After weighing out 0.5 g of cream and mixing it with 50 mL of pure water, the pH was found [20].

Washability: - After putting the cream on the hand, it was watched while running [21].

Viscosity:

The formulation's viscosity was found using a Brookfield viscometer set to 100 r/min and needle No. 7 [22].

Homogeneity:

The formulations' uniformity was checked by judging how they looked and how well they felt when touched [23].

Appearance:

The color, pearl essence, and rigidity of the cream were used to grade its look [24].

Spreadability test: -

The sample of cream was put between two glass slides. For 5 minutes, 100 grams of weight was put on top of each slide to make the cream as thick as possible. After that, the weight was put on the scale. How well it spread was judged by how long it took for the top glass slide to move over the bottom slide [25].

$$\text{Spreadability} = m \times l/t$$

M: Weight Tight to Upper Slide

L: Length Moved on the Glass Slide

T: Time Take

Test for microbial growth:

Make agar media first, and then use the steak plate method to add the cream mixture to the plate to test for bacteria growth. For a test, the cream wasn't needed. After being put in the incubator, which is set to 37°C for 24 hours, the plates were carefully removed. After the time was up, the plates were taken out and compared to the control cell growth [26–28].

Irritancy test-

A square centimeter of space was marked on the left side of the upper surface. The cream was put on the area that was given, and the time was written down. Itching, redness, and swelling were checked regularly for up to 24 hours and reported [30].

Microbial test-

In line with the Indian Pharmacopoeia 2010 and the WHO Guideline, all of the goods were checked for microbes. During the test, Escherichia coli, B. cereus, and S. aureus were looked for. There were also B. cereus and E. coli. A lot of bugs and plants are also there. For example, E. coli (MTCC 0729), S. aureus (MTCC 0902), K. pneumonia (MTCC 0432), and B. cereus (MTCC 1272) were given to us as clean cultures by IMT in Chandigarh, India.

After Feel Effect -

It was checked to see how emollient, slippery, and much residue was left behind after a set amount of cream was applied [33].

Loss on Drying-

A China dish with 1 gram of cream was put in an oven set to 105°C and left there for two hours [34].

$$\text{Loss on drying} = \text{weight loss} / \text{weight of sample} \times 100$$

Rheological Studies-

It was found that the cream that was made was not Newtonian. In a 10 ml glass, put a set amount of 10 grams of cream. Leave it on for an hour. There was a tilt to the beaker to see if the composition had changed. The beaker was turned again to see if the cream could be poured out [25–26].

Stability Studies-

As required by ICH rules, tests were done on the mixture to see how stable it was. The cream-filled bottle was kept in a room with a humidity level of 30 + 2°C and 65 + 5% RH for two months. At the end of the tests, the samples were looked at to see what their physical features were. Check creams that have already been made for the growth of microbes. Agar plates with the streak plate method were used to put the creams that had been made on them. The incubator was turned on and set to 37 °C for 24 hours. The plates were then put in it. The plates were compared to the control to see how much the germs had grown after the time of incubation [27].

Result and discussion-

Antioxidant activity:

It was tried to see if the ethanol extract of could get rid of DPPH radicals. Based on stoichiometry, DPPH radicals lose their color when they join forces with the right reducing agents. At 517 nm, spectrophotometry is used to count how many electrons they use. With an IC50 of 58.39 µg/mL, a sample of ethanol from H. cordata and Babchi seed was studied and discovered to be a much stronger antioxidant than regular ascorbic acid. At a dose of 100 µg/mL, the ethanol extract was the most effective at scavenging (94.1%). This was tried for 30 minutes. Standard ascorbic acid, on the other hand, worked 91.27% of the time at 5 µg/mL [1-2].

Physical properties: Color, smell, and texture were used to judge the physical features of cream that had been made [3].

Washability: The cream that was put on the skin was quickly washed off with water from the tap.

pH of the cream: That's a good pH range for skin. The cream's pH was found to be between 6.3 and 6.9. The plant mixture was found to have a pH level closer to what the skin needs, which is 6.5 [10].

Viscosity: To find out how thick the cream was, a Brookfield viscometer with wheel number LV-4 and 20 rpm was used. The cream had a thickness of 1240 to 48950 mPas, which means that only a little pressure is needed to spread it. At 47560 mPas [17], the cream's thickness is in the normal range.

Spreadability test: The test for spreadability showed that the cream formulation is easy to spread [18].

Irritancy test: During tests, the cream doesn't cause heat, swelling, irritation, or inflammation. It is safe to use the cream that was made [20].

Test for microbial growth: Bacteria did not grow after 24 hours at 37°C; it was the same as the control [22].

Dye test: It's mixed with the scarlet red color. A cover slip is put over a microscope slide and a small amount of the cream is put on it. The slide is then looked at through a microscope. The red background makes the spread globules look white, which means they are a w/o type cream [24].

Homogeneity: Using what it looked and felt like, the cream mixture's consistency was decided. In addition to looking good, the cream felt good too.

Conclusion:

It's easier for buyers to follow through because the face cream that was made is an O/W emulsion that is easy to wash off with water. The formulas (F2) we looked into were more stable. The other mixtures, on the other hand, were not solid, and the emulsion broke down after being kept for a long time. Two of the three mixtures were steady, which means they didn't bleed or change color. The pH of these mixes (F2) was almost always the same, they were all the same, and they were good at keeping things moist. They were easy to take off after use and didn't feel greasy. Skin irritations and allergic reactions were very rare with the steady versions, so they were safe to use. It's clear from what you've read that the ethanol extract of this plant is a powerful antioxidant that can also be used to heal, whiten, and smooth the skin. Rose water also makes skin look and feel better. The microbial limit test counted the number of bacteria and fungi that were present and found that all of the solutions were safe. Pathogens like E. coli, S. aureus, K. pneumonia, and B. cereus were also not there.

Ethics approval: The Ethics Committee has confirmed that there is no need for ethical permission.

Consent for publication: The writers have given permission to publish.

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