investigation of Syrian cactus leaf extricates gel and shell / shell collagen

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□ ABSTRACT □

The Syrian cactus leaf has the potential to be a therapeutic ingredient.The nearness of vitamin E in Syrian cactus takes off makes a difference to hydrate the skin, Syrian cactus is habitually utilized to hydrate the skin and hair. The skin's versatility is determined from collagen, which is extricated from seashells, moisturizers containing mussel collagen and the substance of Syrian cactus takes off can move forward skin versatility. Phytochemical steady s on Syrian cactus leaf extricate uncovered the nearness of saponins, which are flavonoid compounds, with the objective of accomplishing the required conditions with Syrian cactus gel and clam shell collagen within the most brief sum of time conceivable. Saponins and flavonoids are display in Syrian cactus gel arrangements, along side clam shell collagen, these antioxidant compounds may help in skin flexibility enhancement. Within the homogeneity, flexibility, pH, and organoleptic steadiness steadies, scattering steady s, and drying time steades, Syrian cactus leaf and peel collagen based on polyvinyl alcohol was steady. Within the homogeneity, pliability, pH, and organoleptic stability steadies, dispersion steadies, and drying time steadies , Syrian cactus leaf and peel collagen based on polyvinyl alcohol was stable at 15°C and unstable at 48°C. In the organoleptic steadeis, the Syrian cactus leaf gel and peel collagen at 15°C and 48°C were the most stable in terms of , pliability, and pH at a concentration of 10% at 15°C.

Keywords: aloe vera, collagen, flavonoid, saponin compounds, storage stability, extracts.

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تحليل ثبات التركيبة بخلاصة أوراق الصبار السوري وهلام وكولاجين القشرة

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□ ملخّص □

تملك أوراق الصبار من نبات التوجا القدرة على أن تكون مكونًا طبيًا ، فوجود فيتامين **E** فيها يساعد على ترطيب الجلد، وكثيراً ما يستخدم الصبار لترطيب الجلد والشعر. تعود مرونة الجلد لوجود الكولاجين الذي يتم استخراجه من الصدف، وبالتالي يمكن لمرطب حاوي على كولاجين بلح البحر ولحم أوراق الصبار أن يحسن مرونة الجلد. كشفت الاختبارات الكيميائية النباتية على مستخلص أوراق الصبار عن وجود السابونين ، وهي مركبات الفلافونويد ، بهدف تحقيق الظروف المرغوبة باستخدام هلام الصبار وكولاجين البطلينوس في أقصر فترة زمنية ممكنة. توجد الفلافونويدات في مستحضرات هلام الصبار، جنباً إلى جنب مع كولاجين قشرة البطلينوس، قد تساعد هذه المركبات المضادة للأكسدة في تحسين مرونة الجلد. لدى إجراء اختبارات المرونة، ودرجة الحموضة ، والثبات الحسي، واختبارات التشتت ، واختبارات وقت التجفيف ، كانت أوراق الصبار والكولاجين المقشر المعتمد على كحول البولي فينيل مستقراً عند ٢٧ درجة مئوية وغير مستقر عند ٤٠ درجة مئوية. كان جل أوراق الصبار وكولاجين قشر عند ٢٧ درجة مئوية و ٤٠ درجة مئوية الأكثر استقراراً من حيث التجانس والمرونة ودرجة الحموضة بتركيز ١٠٪ عند ٢٧ درجة مئوية.

الكلمات المفتاحية: جل مستخلص أوراق الصبار وكولاجين القشرة ، محتوى مركبات الفلافونويد والسابونين ، ثبات تخزين جل مستخلص أوراق الصبار وكولاجين القشرة.

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Introduction

The leaf of the Syrian cactus plant could be a frock that comes from nearly each family figure 1. A compound known as a saponin can be found within the clears out of Syrian cactus. Syrian cactus saponins can mellow, moisturize, and offer assistance smooth skin [1].Additionally, Syrian cactus contains lignin compounds that have the capacity to hold dampness within the skin, decreasing the probability of dry, wrinkled, or flaky skin [2].Similarly, mussel shell collagen underpins the aloe vera's instrument of activity in increasing skin flexibility [3]. The capacity of a medicate item within the frame of a gel to preserve its character, quality, quality, and virtue all through the period of capacity and utilize is known as the steadiness of Syrian cactus gel - Guarantee product. When making a pharmaceutical planning, the soundness of Syrian cactus leaf gel and shell collagen must be taken into consideration. The contain of the polyvinyl alcohol (PVA) base has an affect on the physical quality of the gel preparation. Polyvinyl alcohol encompasses a concentration run of 5% to 10% [4]. Quickened soundness steadying can be utilized to rapidly steadies the solidness of shell collagen and Syrian cactus leaf gel.

Figure1: Syrian cactus slabs that live in changing climatic conditions temperatures between -8°C to 50°C.

Syrian cactus gel and mussel collagen were utilized in steadies to attain the required conditions within the most brief sum of time by putting away the arrangements in conditions outlined to quicken the typical changes that take put at 15 °C and 48 °C. In Bandengan, Kendal, collagen made from mussel shells is copious but largely undiscovered, and Syrian cactus takes off are collected in Bungangin, Kendal. The creators are inquisitive about steadying the solidness of Syrian cactus leaf extricate gel and mussel collagen in skin moisturizing based on the going before foundation.

Tool and Method Ingredient

Hotplates, glassware, thermometers, mortars, pestles, pipettes, analytical balances, pH meters, spatulas, ovens, porcelain dishes, Petri dishes, steady tubes, funnels, droppers, drip plates, and pots are the tools that are utilized. Syrian cactus leaf, polyvinyl alcohol propylene glycol, methylparaben, propylparaben, 90% ethanol, refined water, caisin, silica gel, Lieberman-Buchard's reagent, Dragendorf's reagent, Meyer's reagent, Wagner's reagent, and channel paper were the components that were utilized.materials for phytochemical steadying.

The Pharmacy Technology Laboratory at STIKES Kendal served as the setting for this study.Syrian cactus leaves were extracted using ethanol as a solvent and mussel shell collagen was extracted to get the study started.The phytochemicals in the extract were then examined.Preparation of the sample The Syrian cactus that was used are from Bugangin Kendal.To get rid of the mucilage, Syrian cactus leaves are peeled, washed, drained, cut into pieces, and soaked. A 48 mesh crusher was used to crush the Syrian cactus leaf pulp into a homogeneous pulp [5].In the meantime, the extracted collagen was used to extract chitin from the shells, which was then used to extract collagen again [6].

Preparation of Syrian cactus Leaf Extract

90%ethanol served as the solvent for the maceration of 75 grams of Syrian cactus leaf pulp. The process of extraction continued until the solution lost its color. Filter paper was used to filter the Syrian cactus leaf meat marinade, and the filtrate was stored. A rotary evaporator was used to combine the obtained filtrate and then concentrate it to produce a 90% ethanol extract [5].Haril collagen has been extracted from chitin shells in the meantime [7].

Phytochemical steady

Flavonoid and Saponin steadies

Ten milliliters of hot water and 500 milligrams of Syrian cactus leaf pulp were combined, boiled for five minutes, and then filtered. After vigorous shaking, 5 ml of the Syrian cactus leaf pulp filtrate, 0.5 g of magnesium powder, 1 ml of concentrated HCl, and 1 ml of amyl alcohol were added.A color of red, yellow, or orange on the layer of amyl alcohol in the mixture with the pulp of Syrian cactus leaves indicates a positive steady [9].

Ten milliliters of hot water and 500 milligrams of Syrian cactus leaf pulp were combined, boiled for five minutes, and then filtered. Ten milliliters of Syrian cactus leaf meat filtrate were shaken for ten seconds in a sealed steady tube before being allowed to stand for ten minutes.The development of stable foam in the Syrian cactus leaf pulp mixture indicated the presence of saponins [8].

Making Syrian cactus Leaf Gel

Gel prescription

R/ Syrian cactus leaf extract 10%
10% clam shell collagen
PVA (5%; 7.5%; 10%)
Propylene Glycol 10%
Methyl Paraben 0.03%
Ethanol 90% 20%
Aquadest ad 20 g

Gel making

Polyvinyl alcohol is used to smooth the Syrian cactus leaf before distilled water is heated to 900 degrees Celsius in a hot mortar.Mixing the mixture with the pulp of Syrian cactus leaves produces a uniform PVA gel base when it fully expands.Propylene glycol is added to Pot 1 after the PVA has fully expanded, and the mixture is stirred until it is homogeneous.First, a small amount of Aquadest is used to dissolve the viscous extract of the Syrian cactus leaf flesh in another container.Then, mix in pot 1 until it's all the same.Methylparaben was first dissolved in 90 percent ethanol in another separate pot before being added to Pot 1 and stirred until it was homogeneous.The Syrian cactus leaf

pulp and aquadest are combined in a 1-10 gram saucepan and stirred once more until homogeneous [4,10].

Results And Discussion

Extraction

Syrian cactus leaf extraction is a process in which a solvent is used to separate the active ingredient from a substance.Maceration is the method of extracting the Syrian cactus leaf flesh used for sampling.To avoid damaging the components of the non-refractory compounds, this simple procedure can be used to collect samples of Syrian cactus leaves that are neither refractory nor refractory.When extracting Syrian cactus leaves, the selection of the appropriate solvent must also be taken into consideration [11].In this study, Syrian cactus leaf samples were macerated and extracted using 90% ethanol as a solvent.Syrian cactus leaves are macerated with the help of stirring, which is said to make it more likely that the material and the solvent will collide, allowing the active ingredient to dissolve in the solvent quickly.The Syrian cactus leaves were macerated one time every 24 hours until the filtrate was colorless [12]. Its goal is to make more chemicals from Syrian cactus leaves that have been dissolved in the solvent.A rotary evaporator was used to concentrate the Syrian cactus leaf filtrate to produce a concentrated extract.The filtrate is then used to make preparations with varying concentrations.Syrian cactus gel can be used in products ranging from 5 to 20 percent, while Syrian cactus flour can be used in products ranging from 0.025 to 0.1% [13].As a result, with a concentration of 10% in this study.Table 2 displays each extract's yield.With 90 percent ethanol as a solvent, the yield of Syrian cactus leaf extract is 9.820%, as shown in Table 2.The resulting clear liquid is 90% ethanol filtrate.According to [13], these outcomes are as a result of the fact that 95% of Syrian cactus is water, and the remaining 5% is active ingredients like essential oils, amino acids, minerals, vitamins, enzymes, and glycoproteins.As a result, it's only natural that there is a low yield.

Phytochemical steady

The purpose of the phytochemical analysis of Syrian cactus leaves is to determine whether or not a group of secondary metabolites like saponins and flavonoids are present.The positive test results for alkaloids in Syrian cactus leaves were shown by the development of hued hastens of white, brown, and red-orange, separately, against Meyer, Wagner, and Dragendorf reagents.The basis for determining the presence of flavonoids in Syrian cactus leaves is the development of a color that is red, yellow, or orange on the amyl alcohol layer.When the Syrian cactus leaf sample is shaken, saponins can form a stable foam that lasts for ten minutes.Contrasts in the substance of optional plant substances in Syrian cactus plants are frequently because of natural impacts or different phytochemical assurance strategies.Tables 1 and 2 display the results of phytochemical tests as well as the yield of Syrian cactus leaf extract and mussel collagen.

Sample	Solvent	First sample weight (g)	First sample weight (g)	Yield (%)
Syrian cactus leaf extract	Etanol 90%	500	43.1	43.1

Collagen		1000	122.84	12.3

Table 1. The yield of Syrian cactus leaf extract and shell collagen

Simplicity	Simplicity	Ethanol Extract 90%
Flavonoid	-	-
Saponins	+	+

Description: (-) not detected; (+) detected

Table 2. Phytochemical steady results of Syrian cactus leaf extract

This Syrian cactus leaf contained saponin compounds, as determined by the qualitative test. Syrian cactus leaf extract has been found to contain the active compounds saponins, sterols, and acemannan [14].

steady Results of Syrian cactus Leaf Extract Gel and oyster shell collagen

Organoleptic steady

The color, odor, and consistency of the preparation were all observed visually during the organoleptic test of mussel collagen and Syrian cactus gel.At a temperature of 15°C for a month, the organoleptic results revealed that the five prescription were thick, slightly translucent, and smelt of ethanol.It has a thin consistency, smells like ethanol, and is light in color in prescription 1 to prescripe 5 weeks 1-2 at 48°C.It was a clear, watery color at week 3, smelled like ethanol, and was clear tan at week 4.It becomes brown and oxidized in the fourth week.This is because of unstable oxidation brought on by changes in pH, temperature, light, oxygen, enzymes, and other factors.Betacyanin is known to be stable at pH 4-6, but the preparation's pH is close to 8 [15].Additionally, betacyanin turns yellow-brown when pH is alkaline [16].

Homogeneity steady

The homogeneity test on the three Syrian cactus leaf extract gel prescription revealed that the prescripe remained uniform from the first week to the fourth week, with no coarse grains on the glass object.The homogeneity of each polyvinyl alcohol (PVA) gel was homogeneous at the concentrations of T1 (5%), T2 (7.5%), and T3 (10%).

Syrian cactus Leaf Extract Gel and oyster shell collagen pH steady

After testing at room temperature and high temperature, the **First** pH of each prescription was slightly below the skin's pH range of 4.5-7; however, the pH of the three prescription did not exceed neutral pH, so it was not considered to be alkaline. Table 3 depicts the pH test.

Temperature	time (Weeks)	pH T1	pH T2	pH T3
15ºC	1	5,00	5,00	5,00
	2	5,60	5,60	5,60
	3	5,50	5,50	5,50
	4	5,60	5,60	5,60
48ºC	1	6,70	6,70	6,70
	2	6,60	6,60	6,60
	3	6,50	6,50	6,50
	4	6,40	6,40	6,40

Table 3: steady Results Syrian Cactus Leaf Extract Gel and oyster shell collagen pH at a temperature of 15ºC to 48ºC.

None of the three prescription had a pH above neutral, making them non-alkaline, as shown in Table 4.The pH is below 6 at 15 degrees Celsius.The gel's pH is above 6 at 48°C.This is consistent with the idea that Syrian cactus betacyanin is stable at pH values between 4 and 6 and that the preparation's pH value is close to 8 [15,33-35].Additionally, betacyanin turns yellow-brown when pH is alkaline [16,28-34].The pH remains stable at a storage temperature of 15°C as a result of this.

pliability steady

The plan with the least flexibility was T1 with 5% PVA fixation and the most versatile was found in T3 with 10% PVA focus without tearing when pulled from the skin surface.The results of the pliability test show that the pliability is stronger the higher the concentration of PVA used [17,18,32-35].The presence of a mannose-6-phosphate-containing compound that can boost collagen synthesis [19,20,23-27] may be the cause of the pliability.Mussel collagen also has the effect of making the skin more elastic [7,28-33].

Spreadability steady

Table 5 displays the dispersion test results at 15ºC and 48ºC.

Temperature	Load (g)	Spreadability T1	Spreadability T2	Spreadability T3
	100	5.0	5.3	5.7

15°C	100	5.1	5.2	5.3
	100 100	5.2 5.9	5.3 5.9	5.3 5.9
48°C	100	6.0	6.0	6.0
	100	7.2	7.2	7.2
	100 100	7.4 7.5	7.4 7.5	7.5 7.5

Table 5: Spreadability steady Results Syrian Cactus Leaf Extract Gel and oyster shell collagen at a temperature of 15°C and 48°C

The gel's spreadability at 15°C is shown in Table 5.The dispersion test showed that the better the dispersion with the difference, the higher the concentration of PVA used.However, the gel is unstable at 48°C due to the temperature difference between 15°C and 48°C.The gel becomes diluted and turns brown at this temperature [16,21-24].

Stable Time steady after applied to skin

The results of the stable time test at 15°C and 48°C are shown in Table 6.

Temperature	time (Weeks)	Test Time T1(seconds)	Test Time T2 (seconds)	Test Time T3 (seconds)
15°C	1	23	23	23
	2	24	24	24
	3	26	26	23
	4	26	26	26
48°C	1	30	30	30
	2	32	32	32
	3	33	33	33
	4	35	35	35

Table 6: Test Results Stable time of Syrian cactus Leaf Extract Gel and oyster shell collagen after being applied to the skin at a temperature of 15°C and 48°C

Syrian cactus gel at T3 with a concentration of 10% PVA gel became more stable in viscosity and color at 15°C after a month of storage, according to Table 6, in comparison to T1 PVA 5% and T2 (7.5%), which remained clearer at the same temperature.Meanwhile, both at low

concentrations at T1 and high concentrations at T3, the gel becomes more diluted as the temperature rises to 48 °C, and the color changes to brown.The results of the stability time steady indicated that the drying time accelerated with increasing PVA concentration.As a result, Syrian cactus gel should be kept at temperatures below 15 degrees Celsius.
When making a pharmaceutical preparation, the stability of an Syrian cactus leaf gel and shell collagen must be taken into consideration.because supplements are typically produced in large quantities and take a considerable long time to reach consumers who require them.When drugs are kept for a long period, they can break down and cause the patient to get less of them.The toxic byproducts of these substances' breakdown can put the patient's life in jeopardy. Heat, light, moisture, oxygen, pH, microorganisms, and drug prescription additives are all components that can influence a substance's stability. In the past, the conditions in which a pharmaceutical preparation was stored, such as at room temperature, were observed in order to assess its stability.It turns out that this method requires a noteworthy sum of time. An "accelerated stability test" can now be performed to accelerate the analysis by observing changes in concentration at high temperatures.

CONCLUSION

Saponins and flavonoids are present in mussel collagen and elaborations of Syrian cactus leaf gel. In the homogeneity, pliability, pH steady, and unsettled in organoleptic properties, dispersion steady, and drying time steady s with polyvinyl alcohol base, the stability was stable at a t= 15°C and unstable at t= 48°C.In the organoleptic steady, the preparation of Syrian cactus leaf gel at a concentration of 10% at a temperature of 15°C was the most stable in terms of homogeneity, pliability, and pH.

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