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FORMULATION AND PHYSICAL STABILITY STUDY OF OYSTER MUSHROOM (*Pleurotus ostreatus)* WATER EXTRACT GEL

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Oyster mushrooms contain several metabolites that have the potential to be developed, including the β-glucan compound and polysaccharide contents of oyster mushrooms, which have pharmacological activity. Water extract from oyster mushrooms has anti-inflammatory activity against skin suffering from atopic dermatitis. This study aims to formulate oyster mushroom extract into gel preparation for potential treatment of atopic dermatitis. To achieve this objective, some formulation designs were defined. There are four formulas with oyster mushroom extract variation. The independent variable is extract concentration, while the responses included pH, viscosity, spreadability, and adhesion, including stability studies in specific conditions. The best formula was performed by Formula 1 with 0.2% of the extract with a pH of 6.0, which is within the range of suitable pH to maintain the skin's natural barrier function, a viscosity of 6025 cP, a spreadability of 5.1 cm, and an adhesion of 2.7 seconds. The optimum formula proved to be physically stable after three months of stability testing and showed no irritation after the irritation test on animals

Keywords: *Oyster mushroom, Pleurotus ostreatus, gel, formulation, stability study*

INTRODUCTION

Atopic dermatitis is a skin disease caused by chronic inflammation, the prevalence of which is highest in children. In Indonesia, the prevalence of atopic dermatitis as a skin disease in children is in the top 10, where around 10-20% of children suffer from atopic dermatitis[1]. Atopic dermatitis is a condition thought to be caused by the excessive production of inflammation-inducing agents, including IL 1-β, IL-6, IL-8, and TNF-α[2].

Indonesians are known for their high level of trust in choosing medicines derived from herbal ingredients compared to synthetic medicines and also have abundant natural wealth from herbal plants. Indonesia is one of the seven countries producing the most oyster mushrooms globally[1]. Oyster mushrooms contain several metabolites that have the potential to be developed, including vitamin B, vitamin C, terpenes, amino acids, phenolic compounds and polysaccharides[3]. One of the known polysaccharide contents of oyster mushrooms with pharmacological activity is the β-glucan compound. β-glucan is a glucose homopolymer bound by β-^{1,3} and β-^{1,6}-glucoside bonds. Research from[4] reported that ethanol extract from oyster mushrooms has anti-inflammatory activity against skin suffering from atopic dermatitis. Oyster mushroom extract suppresses the production of IL-4, an inflammation-inducing agent, and IgE, which is associated with allergies. The β-glucan is also relatively easy to extract using water extraction, which is more environmentally friendly. According to research by[5], β-glucan compounds tend to be more soluble in water (36.76%) compared to alkali (32.76%).

Research related to oyster mushrooms as a drug for atopic dermatitis in vivo was previously done by[4] at Chungnam National University used mice induced with 2,4-dinitrochlorobenzene (DNCB) to prepare mice for atopic dermatitis. Research using ethanol extract gave positive results in reducing lesions due to induction of DNCB compared to the group without treatment. This research used a king oyster mushroom (*Pleurotus eryngii*), which usually grows in Europe, South Asia and

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Central Asia. In Indonesia, mushrooms are one of the horticultural commodities cultivated in Indonesia, and the most famous type of mushroom to be cultivated is the white oyster mushroom (*Pleurotus ostreatus*), which is still in the same family as the king oyster mushroom[1]. Even though they are different species, white oyster mushrooms also contain β-glucan compounds, which are contained in king oyster mushrooms to treat atopic dermatitis. Therefore, this study aims to use oyster mushroom extract formulated in gel dosage form to potentially treat atopic dermatitis.

MATERIALS AND METHODS

Plant Material

Oyster mushrooms (8 kg) were purchased from a local farmer in Yogyakarta. Fresh mushrooms were washed thoroughly with running water and then cut into smaller pieces. The mushrooms were dried by exposure to sunlight and then dried in the oven.

Chemicals

Sodium hydroxide (NaOH), methylparaben, glycerin, propylene glycol, ethylenediaminetetraacetic acid (EDTA), sodium metabisulfite, carbomer, and aquadest were purchased from Ardchem, Yogyakarta, Indonesia. All chemicals were of analytical grade.

Preparation of Water Extract of Pleurotus ostreatus

Pleurotus ostreatus was collected in June 2023 from oyster mushroom cultivation in Yogyakarta, Indonesia and was determined at the Laboratory of Pharmacognosy-Phytochemistry, Faculty of Pharmacy, Universitas Gadjah Mada. Eight kilograms of fresh *Pleurotus ostreatus* were sorted and cut into pieces. Then, they are dried using an oven at a temperature of 100˚C and finely pulverized. Two hundred grams of powdered samples are extracted with the aquadest at a temperature of 70°C. Each powdered sample is immersed for 2 hours while stirred continuously. The mixture was filtered using vacuum pressure (VALUE® High-Reliability Vacuum Pump VE125N WL2305, Made in China), and the filtrates were evaporated with the rotary evaporator at the appropriate temperature.

Preparation of Gel of Oyster Mushroom Extract (Pleurotus ostreatus)

Carbomer is the gelling agent in formulations. First, the carbomer was dispersed in purified water by stirring (IKA® RW 20 D S0000 Code: 08.104374, Made by IKA®) at 215 rpm for 45 minutes. NaOH was dissolved in 5 mL of aquadest. Methyl Paraben was mixed with glycerin and propylene glycol. Sodium EDTA was mixed with Sodium Metabisulfite and aquadest (5 mL). The Methyl Paraben mixture was combined with the Sodium EDTA mixture. Then, both mixtures were added drop by drop to the expanded carbomer using a stirrer. Oyster mushroom extract was dissolved in 10 mL of aquadest. Then, the carbomer base was added with oyster mushroom extract and some drops of essential oil. After that, the NaOH mixture was added until a good gel consistency was formed. The composition of gel with *Pleurotus ostreatus* extract is shown in **Table 1**.

Table 1: Composition of Gel with Pleurotus ostreatus Extract.

Components	F1	F2	F3	F4	Negative blank
Sodium Hydroxide	0.15	0.15	0.15	0.15	0.15
Methyl Paraben	0.15	0.15	0.15	0.15	0.15
Glycerin	5.75	5.75	5.75	5.75	5.75
Propylene Glycol	5.00	5.00	5.00	5.00	5.00
Sodium EDTA	0.01	0.01	0.01	0.01	0.01
Sodium Metabisulfite	0.02	0.02	0.02	0.02	0.02
Carbomer	0.07	0.07	0.07	0.07	0.07
Oyster mushroom water extract	0.2	0.4	0.6	0.8	-
Essential oil	q.s	q.s	q.s	q.s	q.s
Water	ad 100	ad 100	ad 100	ad 100	ad 100

*units in g

Determination of Extract Specification

Organoleptic examination

The organoleptic assessment was carried out visually without any aids. The parameters observed included colour, odour, and form[6].

Percentage of Yield

Extract yield can be obtained from the ratio of oyster mushroom extract weight obtained to the weight of its simplicia[6].

Moisture content

The water content was determined using a Moisture balance tool (OHAUS® MB120 S/N B927918653, OHAUS CORPORATION USA). The aluminium plate is placed in a moisture balance and then tarred. Then, about 2 grams of the extract to be tested were added and spread evenly on the aluminium plate. Close the moisture balance cover and wait until the heating process is complete. The tool will automatically stop when the process is complete. The water content will appear automatically on the tool and be recorded.

Total Ash Content

Determination of ash content was carried out by weighing 1 gram (Mettler-Toledo GmbH ML204T/00) of extract, then placing it in a crucible that has been weighed first. Insert the crucible containing the extract into the furnace to ignite slowly, and then the temperature was gradually increased until it reached a temperature of 600 ± 25^{o}C until it was carbon-free. Then, the crucible was cooled in a desiccator (Thermo Scientific Thermolyne Benchtop F48010-33, Made in the United States), and the weight of the ash inside was weighed[7]. The ash was heated and cooled until a constant weight of 0.25% was obtained from the difference in the last 2 ash weights.

Total Phenolic Assay

A total phenolic content test was carried out to find out how much the amount of phenolic compounds contained in the ethanol extract sample of oyster mushrooms is based on the formation of blue colour from the reaction between Folin Ciocalteu reagent and phenolic compounds, which reduces the phosphotungstate and phosphomolybdate. The total phenolic content test was carried out following the procedures contained in the Indonesian Herbal Pharmacopoeia using the Folin Ciocalteu method.

Make a solution test: 0,2 g Oyster mushroom extract was put into the Erlenmeyer flask, then added to 25 mL of methanol pro analysis, stirred for 30 minutes with a magnetic stirrer, filtered into a 25 ml volumetric flask, and methanol pro analysis was added through the filter until the limit mark.

A comparison solution was made from gallic acid. Carefully weigh approximately 10 mg gallic acid, place in a 25 mL volumetric flask, dissolve with methanol pro analysis, and add to the mark. Make a series of dilutions of the reference solution with successive levels of 100, 70, 50, 30, 15, 5 µg/mL.

β-glucan Assay

Dried simplisia of oyster mushroom as much as 1 mg was mixed with 100 mg of KBr and made into pellets, then analyzed using FTIR at the wavelength of 4000-400 cm^{-1}.

Physical evaluation of gel

Organoleptic test

Observations are made every month for three months of storage, and the samples are evaluated for changes in shape, colour, odour, and homogeneity.

pH test

The pH was determined using a universal pH indicator solution (Loba Chemie Pvt Ltd. LC6430-500 ml, Made in India). The preparation's pH was measured in triplicate, and the average value was reported. The gel preparation is placed on a watch glass, then 2 drops of the liquid indicator are added and waited until the gel colour changes. After that, the gel colour is matched with the pH colour map on the liquid pH indicator packaging to see the pH value of the gel preparation.

Viscosity testing

Determination of viscosity was carried out using the viscometer (LAMY-Rheology H2-025, B-ONE PLUS made in France). The viscosity measurement used a size 6 spindle, a speed of 100 rpm, and a measurement time of 60 seconds. The gel preparation was poured into a glass beaker. A zero setting was first used to remove bubbles to avoid interfering with the measurement. The viscometer was set according to the desired features, and then viscosity measurements could be made. The measurement results will appear automatically on the viscometer screen and will be recorded.

Measurements were made for each preparation when the preparation was finished and every month for three months of storage.

Spreadability testing

The gel preparation of *Pleurotus ostreatus* extract was weighed as much as 0.5 g and placed in the middle of a round glass with a scale. On top of the preparation, another round glass that had been weighed was placed, then left for 1 minute, and the diameter of the spread was recorded. A load of 50 g was added to the cover glass and left to stand for 1 minute, then the spread's diameter was recorded. The weight was added in multiples of 50 g to reach 150 g, and then the diameter of the spread was measured.

Adhesion testing

Gel weighed as much as 0.2 g, was placed in the middle of the object glass, and covered with another object glass. The 1 kg weights are placed on the lid for 5 minutes. The end of the cover slide and the lower side are attached to the clamp on the adhesion tester. Then, the load support is removed. The principle of this adhesion test is like the lap shear test. The sample is placed on two test properties, and then a tensile force is applied until the two test properties separate. The time the two properties separate from each other will be calculated as the adhesion of the gel preparation

Stability Testing

The stability test was conducted based on the ICH Q1A (R2) procedure with an adjustment of the test duration from 6 months to 3 months due to limited time for research. The stabilization test of the optimum formula of oyster mushroom water extract gel was carried out by storing the gel preparation in a climatic chamber (WTB Binder 78532 Type 17005309900312 No. #960925, Made in Germany) at 40±2oC/75±5% RH. The stability of the gel preparation is known by observing the gel within 3 months related to changes in gel characteristics, such as: organoleptic, viscosity, spreadability, and adhesiveness.

Irritation Testing

The dermal irritation or acute test is conducted on animals, namely albino rabbits, to detect any toxic effects that may appear after exposure to the test preparation on the dermal (skin) for up to 4 hours[8]. The dermal acute irritation test aims to determine irritating effects on the skin and assess and evaluate the characteristics of a substance when exposed to the skin[8]. Test animals were prepared under the acute dermal irritation test requirements according to[8], namely by using test animals in the form of albino rabbits (*Oryctolagus cuniculus*), male sex, healthy, mature, and weighing 2 kg. Before the test began, the test animals were acclimatized in the experimental room for 5 days and placed in cages. The number of test animals used was 3, with details of 1 animal getting 2 treatment groups: the optimum formula of oyster mushroom water extract gel and negative control in the form of the optimum formula gel base. 3 preparations were used in the optimum formula of oyster mushroom water extract gel, resulting in 2 repetitions of the formula. The optimum formula is a gel with 0.2 grams of oyster mushroom water extract. The dorsal hair of the test animals was shaved 24 hours before testing. The dose used for the semi-solid test preparation was 0.5 grams. The test preparation was exposed to a 2 x 3 cm^2 skin area. Then, the exposure site was covered with gauze and plastered with a non-irritant plaster. The plaster is made loose using a suitable semi-occlusive bandage during exposure. The plaster was removed after 4 hours and rinsed with water. Observations were made by observing the presence or absence of erythema (redness) and edema (swelling). Response assessment was performed 1, 24, 48, and 72 hours after opening the patch[8].

The data obtained were analyzed to obtain the primary skin irritation index (PII) using the following formula:

$$\text{Primary Irritation Index} = \frac{A-B}{C}$$

Where A is the sum of erythema and edema scores of all sample observation points at 24, 48, and 72 hours divided by the number of observations, B is the sum of erythema and edema scores of all control observation points at 24, 48, and 72 hours divided by the number of observations, and C is several animals.

RESULTS AND DISCUSSION

Results

Determination of Extract Specification

Organoleptic examination

Organoleptic examination of *P. ostreatus* water extract showed dark brown colour, distinctive odour, and thick form.

Percentage of Yield

This research obtained 3 porcelain cups containing thick extract. The extract yield results from the first, second, and third extracts each obtained a value of 15.85, 18.12, and 18.82%. According to the Indonesian Herbal Pharmacopoeia[9], the yield requirement for thick extracts is>10%. Based on the results, all extracts fulfilled the requirements.

Moisture content

The aim of the determination of water content is to determine the percentage of water contained in the extract. Water content affects the growth of microbes in the extract. The lower the water content, the better the stability of the extract. The range of water content for thick extracts, according to[21], is around 5–30%. In addition, the quality standard for thick extracts is ≤ 10%[7]. If the water is too high (> 10%), it can cause the growth of microbes, which will reduce stability[10]. Water content measurement is done using a moisture balance tool. Based on the measurement results, oyster mushroom water extract has a water content of 1.62 ± 0.30%. Therefore, the water content fulfilled the requirements.

Total Ash Content

Determination of ash content presents the percentage of internal and external mineral content that comes from forming simplicia to become a thick extract[11]. According to the[11], a good ash extract content is <10.2%. The higher the ash content, the more mineral content there is in the extract. In this research, the average ash content obtained is 2.85 ± 0.29%, which fulfilled the ash content requirements.

Total phenolic assay

Determination of the wavelength to measure total phenolic content was carried out using a spectrophotometer, and the optimal wavelength was obtained at 741 nm. A standard curve was created using a gallic acid standard. The equation y = 0.0075x - 0.0112 was obtained where x is the concentration of gallic acid, and y is the absorbance obtained from reading the absorbance of the sample solution. The absorbance of the sample solution was converted using the standard curve equation to obtain mg/mL levels. Then, calculations were carried out using a formula to transform again into an extract gallic acid content (mg/g GAE) and calculate the total phenolic assay.

The total phenolic assay average was 33.320 mg/g. The total phenolic compounds present in an extract can be influenced by temperature, evaporation duration, and plant growth location. Phenolic compounds are compounds that are sensitive to heat, so exposure to high temperatures will increase the possibility of reducing the compounds in the extract. The duration of solvent evaporation can cause the likelihood of oxidation reactions in phenolic compounds so that their content can decrease. The location of plant growth affects the phenolic content because, according to previous research by[12], plants that grow at higher temperature locations contain more phenolic compounds. This is suspected because phenolic compounds are secondary metabolites in plants that function as antioxidants. Plants that grow in places with high temperatures are likely to produce more antioxidants to repair the damage.

B-glucan assay

The sample showed in the Fig. 1 some typical absorption bands of β-glucan at wavelengths of 890 cm^{-1} (beta linked), 1076 cm^{-1} (C-O), 1372 cm^{-1} (CHOH), 2919 cm^{-1} (C-H), and 3390 cm^{-1} (OH) (22, 23). In the results of the FTIR spectra, there is a β-1,3 glucan bond characterized by the presence of an absorption band at a wavelength of 893.33 cm-1. The β-1,3 glucan bond is indicated by the wavelength of 895 cm^{-1}[24].

Evaluation of Pleurotus ostreatus Gel

Organoleptic observation

Organoleptic properties play a crucial role in cosmetics due to their ability to improve consumer compliance by elevating the elegance and aesthetics of a formulation[12]. Organoleptic testing is carried out by observing changes in shape, colour, odour, and homogeneity of the gel preparations containing several variations of oyster mushroom water extract (*Pleurotus ostreatus*). The organoleptic test showed that all gel formulas were yellowish-white, smelled like lemon, had a smooth texture, and were homogenous. The higher the concentration of *Pleurotus ostreatus* extract, the more yellowish the colour of the gel preparation. Adding active substances can affect the colour and odour of the dosage formula. The results of the organoleptic test did not show any change in colour, odour, or shape because the preparation was mixed entirely and was stable in storage.

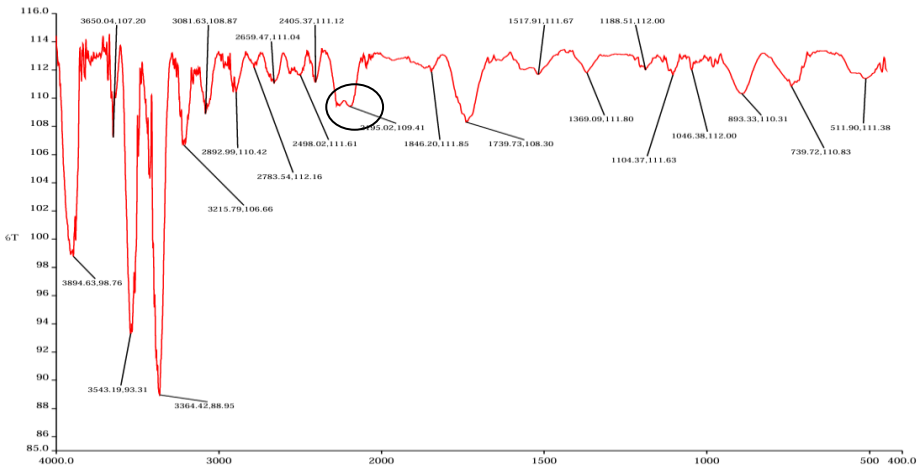


Fig. 1: FTIR of B-glucan.

pH measurement

pH measurement aims to determine the acidity of the gel preparation when used so as not to irritate the skin. The preparation of oyster mushrooms has a pH of 6, meaning there is a range of pH in the skin and meets the requirements 4.5-6.5 [13]. Too acidic gel will irritate the skin, while too alkaline will make the skin dry and itchy[14].

Viscosity testing

Viscosity is done to determine the thickness of a preparation. Viscosity testing of gel preparations was carried out using the LAMY Rheology Viscometer using spindle number 6 and a speed of 100 rpm. The requirements for viscosity are in the range of 2000-40000 cP[15]. As the extract's concentration increases, the preparation's viscosity decreases. The viscosity value decreased showed in the Fig 2a with the addition of oyster mushroom water extract with a water content of 1.62 ± 0.30%. The water content in this extract can affect the viscosity of the preparation.

Spreadability testing

The gel's spreadability shows the gel's ability to spread at the location of use if applied to the skin. As the extract concentration increases, the spreadability of the preparation increases, which is caused by a decrease in viscosity. The spreadability value is inversely proportional to viscosity; the more significant the spreadability, the smaller the viscosity value[16]. Diameter spread power requirements for topical preparations are around 5-7 cm. Based on the results showed in the fig 3a, the diameter of the gel spread was increasing. Based on the results, the high spreadability gel is F4.

Adhesion testing

The viscosity of the preparations gets thicker, and the time needed to separate the two glasses of the object will be longer. The time requirement for good adhesion is not less than 4 seconds[17]. Based on the results showed in the fig 4a, the gel that has the longest adhesion is F1, which is 2.77 seconds, and the fastest adhesion is F4. Viscosity can affect adhesion and spreadability. The higher the viscosity of the gel, the higher the adhesiveness. This is different for spreadability. Namely, the higher the viscosity, the lower the spreadability.

Stability testing

The optimum formula was determined from the results of a 3-month stability test on the gel preparation. The parameters used as references are pH and viscosity because they directly influence the preparation's physical properties. Viscosity results during 3 months of storage showed decreased viscosity from the four formulas. The viscosity values ranged from 3364.67 to 11539 cP (*centipoises*). The highest viscosity value is found in the F1, containing 0.2 g of extract.

Table 2 :Quality of Gel of Oyster Mushroom Extract (Pleurotus ostreatus) .

Criteria	F1	F2	F3	F4
Colour	Yellowish white	Yellowish white	Yellowish brown	Yellowish brown
Odor	Lemon	Lemon	Lemon	Lemon
Shape	Gel	Gel	Gel	Gel
pH	6	6	6	6
Viscosity (cP)	6025±279.35	4818.67±437.26	3733.67±282.91	2381.67±330.94
Homogeneity	Homogenous	Homogenous	Homogenous	Homogenous
Spreadability (cm)	5.1±0.1	5±0.06	5.5±0.6	5.7±0.06

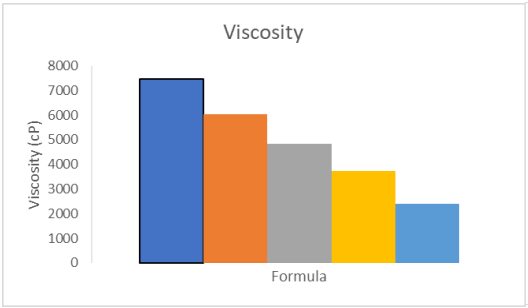
Viscosity will decrease with increasing temperature, which at high energy causes bond breaking[18]. This condition is due to the gel being stored in a stable temperature and humidity (40ºC/75%). Based on the spreadability test, there is an increase in the spreadability during the storage period. This value is proportional to the decrease in viscosity of the preparation. The adhesion test results on each gel formulation were stable. This formula uses carbopol as a gelling agent. According to[19], *Plantago'ssignificant* leaf extract gel uses carbopol, which has pseudoplastic properties, so the oyster mushroom water extract gel is considered to have the same flow properties. Based on these flow properties, the viscosity of the gel will decrease as the shear rate increases[20]. None of the gels changed during the storage period for the colour, odour, and homogeneity observations. The pH of all formulations tends to be stable.

Formula 1 (F1), with a concentration of 0.2 g oyster mushroom water extract, was the best formula, which provided relatively constant pH and viscosity results compared to the other 3 formulas. Therefore, F1 was chosen to be tested for irritation in rabbits to determine whether the gel preparation irritated the skin. F1 hassuitableviscosity and the best appearance among the 4 formulas. The consistency of the gel is good, so it is easy to apply to the skin.

Irritation Testing

Observations were made at 1, 24, and 48 hours after the plaster was removed for the presence of erythema and edema. The result from irritation testing is shown in **Table 3**. Based on the test result, no erythema or edema appeared in the test animals. Erythema is a reddish reaction on the skin that occurs as a result of the side effects of using topical preparations. The redness is also characterized by the appearance of prominent spots distributed symmetrically. Other symptoms that arise are vesiculation (watery) accompanied by itching and burning. Oedema is a swelling reaction on the skin that occurs due to the effects of using topical preparations. Edema occurs due to an increase in the volume of fluid outside the cells (extracellular) and outside the blood vessels (extravascular) which accumulates in the body's tissues.

The calculation result of the primary irritation index is 0. The results showed that the preparation was not irritating and safe for the skin. If irritation occurs in test animals, it can be assumed to originate from the supporting ingredients used in the formula.



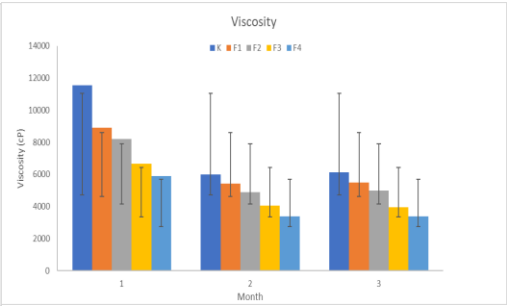
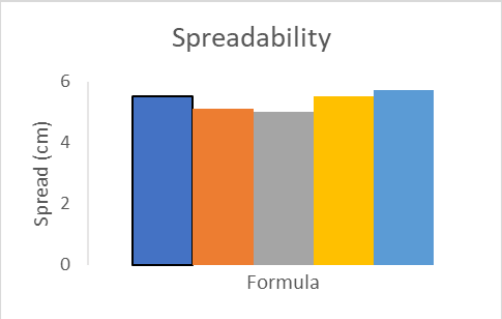


Fig. 2a. Viscosity **Fig. 2b**. Viscosity/month



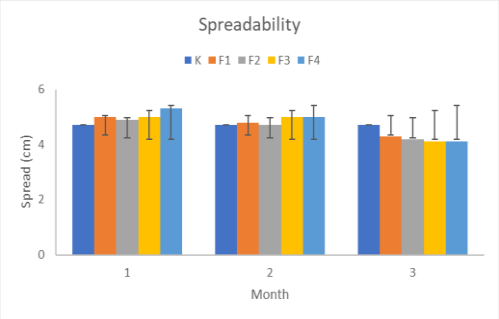
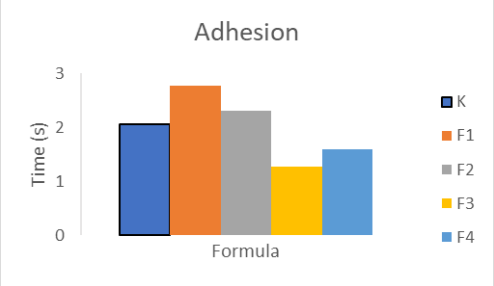


Fig. 3a: Spreadability **Fig. 3b:** Spreadability



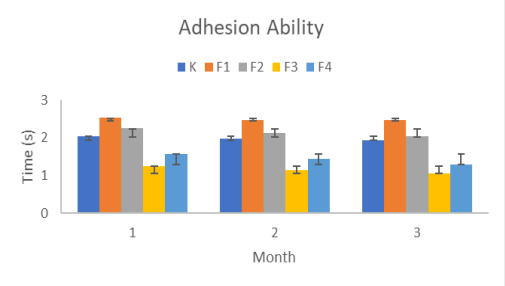


Fig. 4a: Adhesion **Fig. 4b**: Adhesion/monthly

Table 3: Observation Score.

Group	Score at the time of observation							
	1 hour		24 hour		48 hour		72 hour	
	Erythema	Oedema	Erythema	Oedema	Erythema	Oedema	Eritema	Oedema
F1	0	0	0	0	0	0	0	0
F1	0	0	0	0	0	0	0	0
F1	0	0	0	0	0	0	0	0
Negative blank	0	0	0	0	0	0	0	0
Average	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Conclusions

The results of tests on the physical properties and stability of the oyster mushroom water extract gel preparation that had been made showed that F1 was the most optimal formula compared to other formulas. The main parameter was viscosity, which affected the spreadability and adhesion properties. Other parameters, such as organoleptic, homogeneity, and pH, showed consistent results. No irritation

was found in the irritation test. Further research is needed to see the gel's activity in atopic dermatitis.

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دراسة التركيب والثبات للهلام المائى المستخلص من فطر المحار

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يحتوي فطر المحار على العديد من المستقلبات التي لديها القدرة على التطور، بما في ذلك مركب بيتا جلوكان ومحتويات السكاريد في الفطر ، والتي لها نشاط دوائي فعال .والمستخلص المائي من فطر المحار له نشاط مضاد للالتهابات ضد الجلد الذي يعاني من التهاب الجلد التأتبي.وتهدف هذه الدراسة إلى صياغة مستخلص فطر المحار في شكل هلام لعلاج محتمل لالتهاب الجلد التأتبي ولتحقيق هذا الهدف، تم تحديد بعض تصاميم الصياغات المختلفة. وتم اختيار أربعة صياغات من مستخلص فطر المحار. وكان المتغير المستقل المختارهو تركيز المستخلص، في حين شملت الاستجابات العوامل الأتية الرقم الهيدروجيني، واللزوجة، وقابلية الانتشار، والالتصاق، وكذلك دراسات الثبات في ظروف محددة.

وأظهرت النتائج أن أفضل تركيبة تم تحضيرها كانت (Formula 1) والمتكونة من ٠,٢% من المستخلص مع درجة حموضة ٦,٠، وهي ضمن نطاق درجة الحموضة المناسبة للحفاظ على وظيفة الحاجز الطبيعي للبشرة، ولزوجة قدرها ٦٠٢٥ سنتي بواز، وقابلية انتشار ٥,١ سم، والتصاق ٢,٧ ثانية.

وأثبتت التركيبة المثالية أنها ثابتة لمدة ثلاثة أشهر من اختبار الثبات فى الظروفة المستعملة ولم تظهر أي تهيج للجلد بعد اختبارها على الحيوانات .