Ad-Dawaa JOURNAL OF PHARMACY

V0l.02 No.01 Page.58-64

Formulation and Evaluation of Peel-Off Gel Mask with Tomato Fruit Extract Using PVA Base

Ai Rahmi[1 *], Anna L yusuf [2]

*1.*Leuwisari Community Health Center, Tasikmalaya, Indonesia.

2.*STIkes Muhammadiyah Ciamis, Indonesia*

Correspondance: Ai rahmi

Email: ***amiami@gmail.com***

Address : Desa Linggawangi Kecamatan Leuwisari Kabupaten Tasikmalaya.

ABSTRACT

Tomatoes have been widely used in society as a homemade mask by mashing them until smooth and then applying them to the face. Tomatoes have health and beauty benefits because they have high nutritional content such as antioxidants lycopene, vitamin C, potassium, folate and vitamin A. Using tomatoes as a mask has benefits for the skin because they have antioxidant activity so they can provide a brightening effect and can prevent aging.

Peel-off gel masks are one of the masks that are practical to use, because after drying the mask can be removed immediately without rinsing. Peel-off gel masks are made with a Polyvinyl Alcohol (PVA) base as a gelling agent that has the ability to form a film layer so that it is easy to peel off after drying.

Evaluation of the peel-off gel mask preparation consists of organoleptic tests, viscosity tests, pH tests, spreadability tests and drying time tests. From the results of organoleptic observations, the resulting preparation is a thick preparation with a distinctive tomato odor and has a brick red color. The evaluation results of the viscosity test, pH test, spreadability test and drying time test showed that the peel-off gel mask preparation met the requirements.

Keywords : Formulation, evaluation, tomatoes extract.

INTRODUCTION

Tomatoes are fruits that are seasonless and contain various nutrients that are beneficial for health and beauty. Tomatoes are also easy to obtain and relatively cheap. The most active substance contained in tomatoes is lycopene which is found in the flesh of tomatoes. Lycopene is a strong antioxidant compound of the carotenoid group and has high potential in inhibiting free radicals that can damage cells. The lycopene content in 100 grams of tomatoes reaches around 3-5 mg of lycopene. Lycopene is a compound that gives tomatoes their red color. Lycopene acts as an antioxidant compound. Antioxidants are substances that function to protect the body from free radical attacks in the form of atoms, molecules or compounds containing one or more unpaired electrons that are highly reactive and unstable. The antioxidant mechanism is to help change unstable free radicals into a stable form. This means that the free radical chain will stop, thus stopping the oxidation process. Other substances found in tomatoes are carbohydrates, proteins, fats, vitamins A, B and C, calcium, phosphorus, iron, sodium, potassium, fiber and water.

Tomatoes have health and beauty benefits. Consuming one ripe tomato every day for several months is very good for people on a diet. Consuming tomatoes regularly every day can help cure liver disease, gout and asthma.

The extraction method used is the maceration method. Maceration is the process of extracting simple drugs using solvents with several shaking or stirring at room temperature (Ditjen POM, 2000). In maceration (for liquid extracts), fine or coarse powder from medicinal plants in contact with solvents is stored in a closed container for a certain period with frequent stirring, until certain substances can be dissolved. This method is most suitable for thermolabile compounds (Tiwari, et al., 2011).

The maceration method is carried out by soaking wet samples in a solvent liquid. The solvent liquid will penetrate the cell wall and enter the cell cavity containing the active substance so that the active substance will dissolve. The difference in concentration between the active substance solution inside the cell and outside the cell causes the concentrated solution inside the cell to be forced out (Arifulloh, 2013).

The advantage of maceration is that the method and equipment used are simple and easy to obtain. The disadvantage of maceration is that many solvents are used and the processing time is long (Anonymous, 2011).

One type of facial mask is a peel-off gel mask. Peel-off gel facial masks are usually in the form of a gel or paste, which is applied to the skin of the face. After contact for 15 - 30 minutes, the layer is removed from the surface of the skin by peeling (Slavtcheff, 2000). Peel-off gel masks have several advantages compared to other types of masks, including easy use and easy to clean. In addition, it can also be removed or removed like an elastic membrane (Harry, 1973). Peel-off gel masks have several benefits, including being able to relax facial muscles, cleanse, refresh, moisturize and soften facial skin (Vieira, 2009).

TOOLS AND MATERIALS

The tools used in this study were analytical scales, porcelain cups, beaker glasses, measuring cups, water baths, spatulas, stirring rods, spatulas, mortars and stampers, a set of macerators, viscometers, universal pH, and spreading power tools. While the materials used were tomato pulp extract 6 grams, HPMC 12 grams, polyvinyl alcohol 40.5 grams, propylene glycol 45 grams, methyl paraben and propyl paraben each 0.5 grams.

METHODS

The making of simplicia is done in several stages including: Collecting materials in the form of tomatoes (*Lycopersicum esculentum* Mill.) which are obtained directly from tomato plants which are picked by picking them yourself with round tomatoes, evenly red in color that are ripe, around 2-3 months old and have a diameter of between 5.5 - 6.5 cm. Furthermore, wet sorting is carried out to separate dirt or other foreign materials from tomatoes (*Lycopersicum esculentum* Mill.). The next stage is washing which aims to remove soil, insecticides and other impurities attached to tomatoes (*Lycopersicum esculentum* Mill.), carried out using running tap water then dried using a dry cloth, continued with slicing, drying and dry sorting.

Extraction of tomato pulp

The making of tomato flesh extract is done by maceration method. The solvent used to extract tomato flesh is 96% ethanol. The extraction stage is done by preparing the tools for maceration, the dried tomato flesh is then ground using a blender, the tomato flesh simplicia that has been blended is weighed as much as 1000 grams and put into a glass

container, add 96% ethanol as a solvent as much as 3000 ml, let stand for 2x24 hours while stirring occasionally, the maceration extract is thickened using a water bath.

Preparation of peel-off gel mask

The preparation of peel-off gel mask of tomato flesh extract is done by weighing tomato flesh extract, then developing PVA in hot distilled water at a temperature of 80°C until it expands perfectly, then homogenize (container A). Developing HPMC in hot distilled water with constant stirring until it expands perfectly (container B). In another separate container (container C), dissolve nipagin into propylene glycol. Then mix container B and container C successively into container A, then stir until homogeneous. Add extract little by little, then stir until homogeneous, then add distilled water up to 100 grams and stir again until homogeneous. Put the preparation into the container.

Evaluation of Peel-off Gel Mask Preparation

The next stage is to conduct an evaluation test on the peel-off gel mask preparation. The evaluation tests carried out include organoleptic evaluation (odor, color and texture of the preparation), viscosity test, pH evaluation, spreadability test and drying time test.

RESULTS

Extraction results

The extraction results were calculated based on the amount of extraction yield produced from tomato pulp extract through the maceration method using 96% ethanol solvent.

Table 1. Tomato pulp extraction resultsHasil ekstraksi

Sample	Extract weight (grams)	Weight of simple (grams)
Ethanol extract of tomato fruit	73	1.000

Percentage yield = $\frac{\boldsymbol{extract\ weight}}{\boldsymbol{simplicia\ weight}}$ x 100%

= $\frac{\boldsymbol{73\ gram}}{\boldsymbol{1000\ gram}}$

= 7,3 %

Formulation results of the preparation

The peel-off gel mask of tomato fruit extract formulated using a PVA base with a concentration of 12% produced a preparation in the form of a gel. Furthermore, an

evaluation test of the preparation was carried out including organoleptic tests, viscosity tests, pH tests, spreadability tests and drying time tests with the following results:

Table 2. Results of the evaluation test of the peel-off gel mask preparation of tomato fruit extract

Test	Result
Organoleptic	Color: brick red Smell: tomato-like Consistency: thick
Viscosity (cps)	2.816
pH	6
Spreadability (cm)	6,9
Drying time (minutes)	20

DISCUSSION

From the results of organoleptic tests on the peel-off gel mask preparation of tomato fruit ethanol extract, a brick-red preparation was produced with a tomato-like odor and thick consistency. The results of the viscosity test of the preparation had a viscosity value of 2,816 cps. These results indicate that the viscosity of the preparation has met the requirements, because the viscosity of the peel-off gel mask preparation is between 2000-4000 cps. From the data produced, the pH value of the gel preparation is still within the normal skin pH range of 6, which is in accordance with the required pH value. The gel should have a pH that matches the skin pH, which is 4.5 - 6.5 because if the gel has a pH that is too alkaline, it can cause the skin to become dry, while if the pH is too acidic, it will cause skin irritation.

The results of the spreadability test showed that the preparation had a spreadability value of 6.9 cm. These results indicate that the preparation meets the test requirements, this is because the tomato fruit flesh extract peel-off gel mask preparation has a spreadability of between 6 - 7 cm.

The drying time test of the preparation was carried out by applying the tomato fruit flesh extract peel-off gel mask to the back of the hand and observing the time required for the preparation to dry, namely the time from when the peel-off gel mask was applied until a dry layer was completely formed, which is around 15-30 minutes. Based on the table above, the tomato fruit flesh extract peel-off gel mask preparation has a drying time of 20 minutes. The test results show that the drying time of the preparation from the formula still meets the standard because it is in the range of 15-30 minutes.

CONCLUSION

Tomato fruit (*Lycopersicum esculentum* Mill.) can be made into a preparation in the form of a peel-off gel mask containing tomato fruit flesh extract to be used as a facial mask. The preparation of a peel-off gel mask with tomato fruit extract with a PVA base meets the evaluation test which includes organoleptic test, viscosity test, pH test, spreadability test and drying time test.

ACKNOWLEDGEMENTS

Our deepest gratitude for the assistance from Leuwisari Health Center for their assistance and facilities in carrying out the research and writing this article so that this research has been completed properly.

REFERENCES

Arifulloh. (2013). Ekstraksi Likopen Buah Tomat (*lycopersicum esculentum Mill.)* dengan Berbagai komposisi pelarut. Universitas Jember.

Bernardinus. T. Wahyu Wiryanto. (2002). Bertanam Tomat, cet.1, Agro Media Pustaka. Jakarta.

Draelos, Z. D and L. A. Thaman. (2006). Cosmetic Formulation of Skin Care Product. New York : Taylor & Francis Group. P. 377.

Garg, A., A. Deepika, S. Garg, and A. K. Sigla. (2002). *Spreading of semisolid formulation*. USA : Pharmaceutical Tecnology. Pp. 84-104.

Kharisma. I. (2014). Formulasi dan Uji Aktivitas Antioksidan Sediaan Masker Peel-off Ekstrak Etanol 50% Kulit Buah Manggis (Garcinia mangostana L.). Universitas Islam Negeri. Jakarta.

Kikuzaki, H., Hisamoto, dkk. (2002). Antioxidants Properties of Ferulic Acid and Its Related Compound, J. Agric. Food Chem, 50 : 2161-2168.

Martin, A., J. Swarbrick, and A Cammarata. 1993. Farmasi Fisik: Dasar-dasar Farmasi Fisik dalam Ilmu Farmasetik. Edisi Ketiga. Penerjema: Yoshita. Jakarta: UI Press. Hal. 1129-1187.

Rekso, G. T dan Sunarni, A. (2007). Karakteristik Hidrogel Polivinil Alkohol Kitosan Hasil Iradiasi Sinar Gamma. Jakarta : Pusat Aplikasi Teknologi Isotop dan Radiasi (PATIR) – BATAN.

Rowe, R. C., P. J. Sheskey, dan M. E. Quinn. (2009). Handbook of Pharmaceutical Excipients.

Edisi ketujuh. Pharmaceutical Press and the American Pharmacist Association, USA.

Septiani, S., N. Wathoni dan S. R. Mita. (2011). *Formulasi Sediaan Masker Gel Antioksidan Dari Ekstrak Etanol Biji Melinjo (Gnetun GNEMON Linn.).* Universitas Padjadjaran. Bandung.

Setiawan, A. I. (1994). Tomat : Pembudidayaan Secara Komersial. Jakarta : Penebar Swadaya.

Slavtcheff, C. S. (2000). Komposisi kosmetik untuk masker kulit muka. Indonesia Patent 2000 / 0004913.

Tiwari, P., Kumar, B., Kaur, M., Kaur G., Kaur, H. (2011). Phytochemical Screening and extraction : A Review. International Pharmaceutical Sciencia, Vol 1 Issue 1, 99 – 106.

Tranggono, R.I., dan F. Latifah. (2007). Buku Pegangan Ilmu Pengetahuan Kosmetik. PT. Gramedia, Jakarta.

Vieira, Rafael Pinto, *et al*. (2009). Physical and Physicochemical Stability Evaluation of Cosmetic Formulations Containing Soybean 40 Extract Fermented by Bifidobacterium animalis. Brazilian Journal of Pharmaceutical Sciences vol. 45 (3): 515-525.

Wathoni Rusdiana T. Hutagaol R Y. (2009). Formulasi Gel antioksidan Ekstrak Rimpang Lengkuas dengan menggunakan basis Aqupec 505 Hv. Skripsi. Universitas Padjajaran. Bandung