

PROCEEDING

The International Conference on
**Pharmacy and Advanced
Pharmaceutical
Sciences**

Faculty of Pharmacy UGM
Yogyakarta Indonesia
October 2009



Pharmacy and Advanced Pharmaceutical Sciences

Faculty of Pharmacy UGM



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**The International Conference on Pharmacy
and Advanced Pharmaceutical Sciences
Yogyakarta, Indonesia, 2009**

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Preface from the Editor

The proceeding was produced based on papers and posters presented at the international Conference on Pharmacy and Advanced Pharmaceutical Sciences, held in Yogyakarta, Indonesia, 5 – 6 October 2009.

The proceeding clearly reflects broad interest; from there are participants coming from all around the world. Many contributions on Pharmaceutical Sciences there are quite a substantial number of papers on Pharmacist role in general. The papers presented file into a broad spectrum in Pharmaceutical sciences including Pharmacology, Toxicology, Analytical Chemistry and Drug Design, Drugs Synthesis, Formulation of Drugs, Pharmacy Social, Pharmacoepidemy, Traditional Medicine Natural Product Chemistry and Phytochemistry, etc.

In addition there are substantial numbers of paper deal with professional aspect of Pharmacist in general health care.

In this an opportunity, I would like to express my appreciation to the editorial team of the proceeding who have been working hard to review manuscripts, and making the first edition of this proceeding be possible.

I would like also to thanks to all invited speakers and presenters who participated in the International Conference on Pharmacy and Advanced Pharmaceutical Sciences and your contribution to this proceeding.

Finally, I hope this proceeding will give contribution to the advanced scientific research in the field of pharmaceutical sciences

Yogyakarta, July 2010

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Welcome Message From the committee

Welcome to Yogyakarta

On behalf of the Scientific and Organizing Committees, it is a great pleasure for me to welcome all participants to Yogyakarta, to the International Conference on Pharmacy and Advanced Pharmaceutical Science 2009.

The international conference is organized by the faculty of Pharmacy UGM to celebrate its 63th anniversary and the Lustrum XII of Gadjah Mada University, as a collaboration work between the Faculty of Pharmacy UGM with the Nara Institute of Science and Technology (Japan) and the Universiti Sains Malaysia (Malaysia). In this conference 15 lectures within the field of Pharmaceutical Care and Advanced Pharmaceutical Science will be given by invited speakers. Besides, 55 posters and 75 paper will be presented in the parallels presentation sessions. Herewith, we express our gratitude to all speakers and presenter, who would like to share their advance knowledge in this scientific event.

The Organizing Committee gratefully acknowledges the Nara Institute of Science and Technology and the Universiti Sains Malaysia, for the nice collaboration in bringing forth this conference. A special acknowledgment is addressed to the Rector of Gadjah Mada University and the sponsors, for all supports that make this symposium possible. Furthermore, personally, I want to express my deep appreciation to the members of the Organizing Committee, for the good teamwork and their great effort given in the preparation for this symposium.

Finally, I wish all participants a scientifically rewarding and an enjoyable meeting in Yogyakarta.

Chairman

Dr. Hilda Ismail, M.Si., Apt.

Remark of the Dean Faculty

Assalamu'alaikum wr. wb.

Distinguished ladies & gentlemen.

First of all, on behalf of the Faculty of Pharmacy Universitas Gadjah Mada, I would like to welcome you to all of you in Yogyakarta, thank you very much for your attention to come and to attend the international Symposium on Pharmacy and Advanced Pharmaceutical Sciences. I hope we are all in health condition.

Ladies and gentlemen,

The symposium is organized by the Faculty of Pharmacy UGM in collaboration with the Faculty of Pharmaceutical Sciences Universiti Sains Malaysia and the Nara Institute of Science and Technology Japan, and held as part to celebrate the 63th anniversary of the Faculty of Pharmacy UGM.

In the symposium, I hope we can communicate our recent information concerning social / clinical pharmacy and pharmaceutical sciences. I hope the symposium will be very fruitful, very useful for all of us.

I address special thanks to the plenary speakers both from domestic and abroad, the oral and poster presenters, as well as to those who come just to know the development of clinical or social pharmacy and pharmaceutical science. Your willingness to come, to communicate and to share your experiences is highly appreciated.

Special thanks also I address to my colleague the Dean of Faculty of Pharmacy USM who has been coordinating USM students to attend this symposium. The hope is not to set up networking between the pharmacy students of USM and UGM.

Therefore, during almost whole day discussing scientific matter related to human health and welfare, I hope we can make a wonderful opportunity to make a scientific closer relationship while we enjoy the cultural performances of Yogyakarta presented by our pharmacy student.

Finally, I hope that this meeting will give benefits to all of us, and we may see each other again in a similar event in the near future.

I look forward to thank you all for attending this event.

Wassalamu'alaikum wa rahmatullahi wa barakatuh,
Dean of Faculty of Pharmacy UGM

Prof. Dr. Marchaban, DESS., Apt.

Speech of the Senior Vice Rector For Education, Research and Community Services, Gadjah Mada University

Assalamu'alaikum wa rahmatuLahi wa barakatuh,

On behalf of the Rector, I would like to welcome all of you to our campus Gadjah Mada University and to our home town Yogyakarta. It is a great honor for me and Gadjah Mada University to host the Two-day International Conference on Pharmacy and Pharmaceutical Sciences that is conducted by the Faculty of Pharmacy, Gadjah Mada University. The increasing problems and new cases of some diseases in the world, both the infectious and the degenerative diseases, have demanded the development of medical and pharmaceutical sciences and technologies for supporting the developments of early detection methods of the diseases, the accurate diagnoses, as well as the appropriate and effective medications or therapy. Pharmaceutical Science and Technology have been developing very fast within recent years. The development trend shows using much more biotechnological approach in both diagnose establishment and medication administrations. For examples the usage of some serums, enzymes, hormones, vaccines, etc., and their recombinant products. The science and technology for finding prevention method against infectious diseases or degenerative diseases now have been developing so amazing, for example the usage of growth hormones, vaccines, and stem cells for it.

Gadjah Mada University has been committed to become World Class University; therefore international networking in education, research and publication is much needed. I really support to this international conference on Pharmaceutical Science and Technology which can keep us in touch with the state of the art of pharmaceutical science. I do believe that by conducting this kind of international meeting, we can get and exchange new information and best practices on pharmaceutical science and technology, and it is very important to inspire our young researchers and enhance our research networking internationally. In this occasion, I would like to express my great gratitude to all the guest speakers and speakers, who have contributed their advanced presentations in this international conference. I also would like to extend my gratitude to the Organizing Committee from the Faculty of Pharmacy, Gadjah Mada University, who has already successfully arranged this international conference. I would also thank to all institutions or companies who have sponsored and supported this conference.

Finally, have a fruitful conference and enjoy Yogyakarta. Thank you
Wassalamu'alaikum wa rahmatuLahi wa barakatuh,

Senior Vice Rector for Education, Research and Community Service
Gadjah Mada University

Prof. Dr. Retno Sunarminingsih, M.Sc., Apt.

CONTENTS

Preface from the Editor	i
Organizing Committee	ii
Welcome Message Proceeding International Conference on Pharmacy and Advanced Pharmaceutical Sciences	
From the committee	iii
Remark of the Dean Faculty	v
Senior Vice Rector For Education	v
CONTENT	vi

Pharmacogenetics : in case of cytochrome P450 oxidases (CYPS) related to adverse drug reactions Arum Pratiwi, Harianto Lim and Ronny Martien	1 – 4
Interaction of turmeric and garlic extract combination against free radical scavenging activity Patonah, Daryono H. Tjahjono, Elin Yulinah S. and I Ketut Adnyana	5 – 6
Influenced of Kojic Acid and B-Cyclodextrin on SPF Value Sunscreen Product Contained Oxybenzone and Octyl Dimetyl Paba (3:7) (In vanishing cream base formulation) Diana, Tristiana Erawati, Widji Soeratri and Noorma Rosita	7 – 14
Isolation and Antimicrobial activity of endophytic fungi <i>Kabatiella caulivora</i> var B isolated from <i>Alyxia reinwardtii</i> BL Noor Erma Sugijanto, Dian Anggraeny and Noor Cholies Zaini	15 – 17
Rapid and Simple Luciferase Reporter Gene Assays for the Discovery of Peroxisome Proliferator-Activated Receptor α and γ Agonists and Nuclear Factor- κ B Inhibitors from Medicinal Plants. N. Fakhrudin, S. Vogl, P. Picker, E. H. Heiss, J. Saukel, G. Reznicek, B. Kopp, A. G. Atanasov and V. M. Dirsch	18 – 24
Identification of components of essential oil from <i>Cananga odorata</i> which penetrated into the rat skin /(wistar strain) in the practice of <i>Timung</i> (development of <i>Timung</i> as alternative healing) Mangestuti Agil, Esti Hendradi and Budiastuti	25 – 29
In Vivo Antihyperglycemic Test of Albedo Durian (<i>Durio zibethinus</i> M) Extract on Aloxan-Induced Diabetic White Rat (<i>Rattus norvegicus</i>) F. M. Cahyani, I. Susanti, R. Ratna, Y. D. Panggi and Y. Pravitasari	30 – 33
Effect of Pasak Bumi's Root (<i>Eurycoma longifolia</i> , Jack) on Sperm Output in Rats Farida Hayati and Mustofa	34 – 37

The Influence of Arbutin 3% and Sesame Oil (3,5,7 % w/w) on SPF Values of Oxybenzon and Padimate O (3:7% w/w) in carbomer Gel Base Noorma Rosita, Tristiana Erawati and Rafi Jikrona	38 – 43
Sulochrin as α -glucosidase inhibitor <i>lead compound</i> Rizna Triana Dewi, Ahmad Darmawan, Sofna D.S Banjarnahor, Hani Mulyani, Marisa Angelina and Minarti	44 – 48
The Practice of Complementary Indigenous Malay Therapies In Rural Areas: Do Users' Attitudes, Beliefs And Perceptions Significantly Differ From Non-Users? Pei Lin Lua, Rohayu Izanwati Mohd Rawi, Suffian Mohamad Tajudin, Norlida Mamat and Ahmad Zubaidi Abdul Latif	49 – 54
An Interventional Pilot Study: Effect Of Dark Chocolate Consumption On Anxiety Level Among Female Nursing Students Sok Yee Wong, Pei Lin Lua, Rohayu Izanwati Mohd Rawi, Rokiah Awang, Ahmad Zubaidi and Abdul Latif	55 – 62
The Anti-proliferation Assay of Bioactive Fraction from <i>Curcuma zedoaria</i> Rhizome Ros Sumarny, Priyosoeryanto B. P., letje W., Latifah K. D. and Chairul	63 – 67
Studies of Sub-acute Toxicity Assay from <i>Acorus calamus</i> L. in Experimental Animal Models Banjarnahor S.D.S, Sri Hartati and Megawati	68 – 71
Antioxidant Properties and Phenolics Content of <i>Mikania scandens</i> L.(Wild) Sumi Wijaya, Ting Kang Nee, Khoo Teng Jin and Christophe Wiart	72 – 77
The Influence of Olive Oil Addition on Increasing of Arbutin Penetration in the Carbomer-940's Gel (Observation on Inhibition of Enzyme Tyrosinase Activity) Widji Soeratri, Tristiana Erawati, Noorma Rosita and Fahriyatul Wahyuni	78 – 81
The difference of antioxidant activity of various tea (<i>Camellia sinensis</i> L.) methanol extract Wahyu Widowati, Tati Herlina and Hana Ratnawati	82 – 88
Chemical Stability of Cisplatin and Ondansetron During Simulation of hemotherapy Administration Yahdiana Harahap, Rizka Andalusia and Armon Fernando	89 – 94
The Effects of Cassava Starch (<i>Manihot utilissima</i> , Pohl.) as a Binder on Physicochemical Characteristics of Acetaminophen Tablet Formulation Yandi Syukri, Tri Rahayu Ningsih and M. Hatta Prabawa	95 – 98
Drug Interaction Study in Hospitalized Hepatic Cirrhosis Patient in Dr. Ramelan Navy Hospital Amelia Lorensia, Aziz Hubeis, Widyati and Hary Bagijo	99 – 102
The Effect of Cold Storage in Krebs-Henseleit Buffer in the Viability and Metabolic Activities of Precision Cut Intestinal Slices Dewi Setyaningsih, AA Khan and GMM Groothuis	103 – 110
The Effect Of β -Cyclodextrin And Oxybenzone-Octyl Dimethyl Paba (3:7% W/W) Addition	

On The Penetration Of Kojic Acid In Vanishing Cream (Based on Activity Inhibition of Tyrosinase) Diana Winarita, Tristiana Erawati, Noorma Rosita and Widji Soeratri	111 – 116
The profile of knowledge and self-medication in handling cough symptoms by students of pharmacy at Airlangga university Elida Zairina, Liza Pristianty and Lestriana Kusumasari	117 – 120
The Characteristics and Release of Diclofenac Sodium of Niosome System in Carbomer 940 Gel Base Preparation (Niosome System of Diclofenac Sodium-Span 60-Cholesterol with Molar Ratio 1:5 :5) Esti Hendradi, Tutiek Purwanti, Bety Nurfia Puspitarini and Bianda Ida Kurnia	121 – 128
Red Betel Vine (<i>Piper Crocatum</i>) Essential Oil as Antituberculosis Farida Juliantina Rachmawaty	128 – 133
Effect of Pasak Bumi's Root (<i>Eurycoma longifolia</i> , Jack) on Sperm Output in Rats Farida Hayati and Mustofa	134 – 137
The Influence of Sesame Oil Addition on Arbutin Release from Carbomer-940 Gel Bases Hanifa Rahma, Tristiana Erawati and Noorma Rosita	138 – 141
Phytochemical Screening and Determination of Antioxidant Activity of Fractions from Ethyl Acetate Extract of <i>Phyllanthus acidus</i> (L.) Skeels Leaf Hindra Rahmawati, Hesty Utami and Moordiani	142 – 145
Study on Antihyperglycaemic Activitiy of Ethyl Acetate Extract of Sidaguri (<i>Sida rhombifolia</i> L.) Stem on Alloxan-Induced Diabetic Mice (<i>Mus musculus</i> L.) Irma Ratna K, Muktiningsih, Suhartono, Natalia Elisabeht and Muhammad Ali Zulfikar	146 – 152
The Influence of Arbutin and Olive Oil as an Enhancer in Characteristic and SPF Value of Sunscreen (Combination of Oxybenzone and Octyldimethyl Paba in <i>Carbomer</i> 940 Gel Base) Josephine Paramita Ayuningtyas, Tristiana Erawati, Noorma Rosita and Widji Soeratri	153 – 160
The Effect of Secondary Emollients Triethylhexanoate, Isopropyl myristate, and Propyleneglycol Isostearate on in-vitro skin penetration of tocopheryl acetate cream using Franz-diffusion cell Joshita Djajadisastra, Sutriyo and Fraida Aryani	161 – 165
Immunomodulatory activity of <i>Plantago major</i> L. on IgM titer of mice Kartini, A. Kirtishanti, Dessy, Fauziah and Isnaini	166 – 169
Antibacterial activities of <i>Aleurites moluccana</i> (Euphorbiaceae) Othman Abd Samah and Rasyidah Mohamad Razar	170 – 178
Total synthesis and revised structure of benzophenone glucopyranosides from <i>phaleria macrocarpa</i> Phebe Hendra, Yukiharu Fukushi and Yasuyuki Hashidoko	179 – 185
Influence of Tween 80 Concentration in Carbomer/ Tween 80 Aggregate on Kojic Acid	

Penetration (Observed on Inhibiting Tyrosinase Activity in Vanishing Cream) Siti Evi Jayanti, Tristiana Erawati and Noorma Rosita	186 – 191
Validation for Result Degradation of Nifedipine Residue with Thin Layer Chromatography-Densitometry and Thin Layer Chromatography-Spectrophotometry Sitti faika and Sudibyo Martono	192 – 195
Synthesis and Biological Activity Test of Antibiotic UK-3 Analogues, 2-Hydroxynicotinyl-Butyl-Serine-Ester and Its Derivatives Ade Arsianti, Kiyomi Kakiuchi, Tsumoru Morimoto, M.Hanafi and Endang Saefudin	196 – 198
Vitamin e content in the dragon fruit Established by high performance thin layer chromatography–densitometry Any Guntarti and Warsi	199 – 204
Drug interaction study in hospitalized hepatic cirrhosis patient in Dr. Ramelan navy hospital Amelia Lorensia, Aziz Hubeis, Widyati and Hary Bagijo	205 – 208
PGV-1 inhibits G2M phase progression in WIDr colon cancer cell Endah Puji Septisetyani, Edy Meiyanto, Masashi Kawaichi and Muthi' Ikawati	209 – 212
Proceeding International Conference on Pharmacy and Advanced Pharmaceutical Sciences The influence of oleic acid pre-treatment on transport of epigallocatechin gallat in green tea (<i>Camellia sinensis</i> , L) extract Across mice skin in vitro Nining Sugihartini, Achmad Fudholi, Suwidjiyo Pramono and Sismindari	213 – 215
Development and Production of Anti Tuberculosis Fixed Dose Combinations (FDCs) Barokah Sri Utami, Syamsul Huda, Nurliya Irfiani and Badrus S.	216 – 218
The Characteristics and Release of Diclofenac Sodium of Niosome System in Carbomer 940 Gel Base Preparation (Niosome System of Diclofenac Sodium-Span 60-Cholesterol with Molar Ratio 1:5 :5) Esti Hendradi, Tutiek Purwanti, Bety Nurfia Puspitarini and Bianda Ida Kurnia	219 – 224
The Characteristics and Release of Diclofenac Sodium of Niosome System in Carbomer 940 Gel Base Preparation (Niosome System of Diclofenac Sodium-Span 20-Cholesterol with Molar Ratio 1:5 :5) Esti Hendradi, Tutiek Purwanti, Anditasari and Srimaryati	225 – 231
An Interventional Pilot Study: Effect Of Dark Chocolate Consumption On Anxiety Level Among Female Nursing Students Sok Yee Wong, Pei Lin Lua, Rohayu Izanwati Mohd Rawi, Rokiah Awang and Ahmad Zubaidi Abdul Latif	232 – 239
Antiemetics utilization in cancer patients with high emetogenic cytotoxic drugs in two govermental hospital in indonesia Dyah Aryani Perwitasari and Ana Hidayati	240 – 243
KEY WORDS INDEX	244
DISCUSSION	246

The Influence of Olive Oil Addition on Increasing of Arbutin Penetration in the *Carbomer-940's* Gel (Observation on Inhibition of Enzyme Tyrosinase Activity)

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Abstract

The aim of this study was to investigate the influence of olive oil addition on the increasing of arbutin penetrations in the *Carbomer-940's* gel; it was observed on inhibition of enzyme tyrosinase activity. High hydrophilicity of arbutin (log P. value, -1.35) makes it difficult to permeate through the skin and reach site of action. Olive oil addition was expected to increase the arbutin penetrations. Percent inhibition of tyrosinase by arbutin was determined by observing absorption value of Dopachrome (in intermediate product of melanin formation) using spectrophotometer. The result of this study, percent inhibition of the formula control, 1, 2 and 3 were 21.79; 24.24; 21.79 and 35.60% respectively. The processing data was using the statistic programmed of SPSS 12.0 with one way ANOVA method obtained the result there was significant difference from percent inhibition in one of formula. Conclusion from this study was olive oil addition 7% could increase of arbutin penetrations and increase the inhibition of enzyme tyrosinase activity.

Keyword: Arbutin, Penetrations, Olive oil, Enzyme tyrosinase, *Carbomer-940's*, inhibition

Introduction

Arbutin is mostly used as lightening agent which was very hydrophilic with log P value -1.35; make it difficult to penetrate through the skin. Enhancer can be adding to increase penetration rate. Olive oil (3, 5 and 7%) addition was expected to increase the arbutin penetrations. Olive oil contains oleic acid (83.5%), a substance that's capable of interacting and modifying the lipid bilayer of stratum corneum to increase the lipophilicity of a substance. Its ability as penetration enhancer in local anesthetic agent has been proofed by Sarma and Fisher (Sarma, 1993).

Among several variant skin lightening preparations, gel gives us a cool sensation, not sticky, elegant, and smooth and easy to be washed from the skin. A synthetic gelling agent like *carbomer* 940 usually requires only a small amount of them to produce a gel with good consistency compared to other types of gelling agent.

The aim of this study was to investigate the influence of olive oil (3, 5, and 7% w/w) addition on the arbutin (3% w/w) penetrations in the *Carbomer-940* gel base through the modified lipid membrane. It was observed on inhibition of enzyme tyrosinase activity.

Methodology

Preparation of skin lightening gel containing arbutin and olive oil

The arbutin in *Carbomer-940* gel base formulas as lightening product was shown in table 1.

Characteristics determination of skin lightening gel

The characteristic of preparation were determined include: organoleptic test visually. While the determination of pH and spread ability is done in 2 days after the formula were made by using a digital pH meter Schott CG 842. and a spreading-ability apparatus.

Table 1: Formula used in research

Material	Concentration (% w/w)				
	Base	Control	F1	F2	F3
Arbutin	-	3	3	3	3
Olive oil	-	-	3	5	7
Carbomer 940	1	1	1	1	1
TEA	1	1	1	1	1
Propylene glycol	20	20	20	20	20
Methyl-parabene	0.15	0.15	0.15	0.15	0.15
Propyl-parabene	0.05	0.05	0.05	0.05	0.05
Na EDTA	0.05	0.05	0.05	0.05	0.05
BHT	0.05	0.05	0.05	0.05	0.05
Tween 80	0.5	0.5	0.5	0.5	0.5
Water up to	100	100	100	100	100

Determination of enzyme tyrosinase activity

L-tyrosine solution 0.5 ml added with 3.0 ml sample solution that collected from compartment receptor after 360 minutes penetrated through Millipore membrane which was impregnated with isopropyl-myristate. The mixture was oxygenized 5 minutes then added with 1.0 ml tyrosinase solution. After incubated for 10 minutes at 25°C the mixture was inactivated with 0.5 ml TCA solution and then the absorption value measured at maximum wavelength of dophacrome (Avanti, 2003).

The evaluation of inhibition of enzyme tyrosinase activity

The inhibition of enzyme tyrosinase activity was performed as inhibition percent, which found from calculation of absorption value per second enzymatic reaction with inhibitor, compared with absorption value per second enzymatic reaction without inhibitor, using the following equation (Luanratana and Gritsadapong, 2005):

$$\text{inhibition(\%)} = 100 - \frac{(A \times 100)}{B}$$

Whereas:

A = absorption value (A/second) at dophacrome λ maximum with inhibitor

B = absorption value (A/second) at dophacrome λ maximum without inhibitor

The data (inhibition %) were analyzed with ANOVA one way method ($p < 0.05$).

Results and Discussions

The pH of arbutin gels shows in table 2 indicated that 3, 5, and 7% w/w concentration of olive oil not influenced the pH value of arbutin gels. Based on the pH data was known that all formulas have suitable pH (5.84 – 6.53) for skin around 4.0 – 6.8 (Zulkarnain, 2003).

Figure 1 shows the spreading profile of arbutin gel preparation, and spreading-capacity (spreadingdiameter) of arbutin gels at 45 gram ballast shows in table 3. The ANOVA one way test of spreading-capacity found the value of $F_{\text{calculation}} (196.533) > F_{\text{table}} (4.07)$. Based on the HSD test can concluded that addition 7% w/w olive oil decreased the spreading-capacity of arbutin gel preparation. Spreading-ability was the slope of linier-regression between spreading-diameter (mm) and ballast weight (gram), its shows in table 4. The slope value from its formulas was tested by ANOVA one way method, it's found that the value of $F_{\text{calculation}} (23.669) < F_{\text{table}} (4.07)$. From HSD test can concluded that addition

olive oil decreased the spreading-ability of arbutin gel preparation by increasing concentration of olive oil 3, 5 and 7% w/w.

Table 2. The arbutin gel pH values

Formula	pH	
	Mean ± SD	%CV
Base	6.00 ± 0.01	0.17
Control	6.16 ± 0.11	1.78
Formula 1	5.84 ± 0.08	1.37
Formula 2	6.53 ± 0.05	0.76
Formula 3	6.45 ± 0.02	0.31

The arbutin effectivity as lightening agent calculated as inhibition percent (%) of enzyme tyrosinase activity. The result of arbutin inhibition percent (%) with enhancer olive oil in carbomer gels shows in table 5.

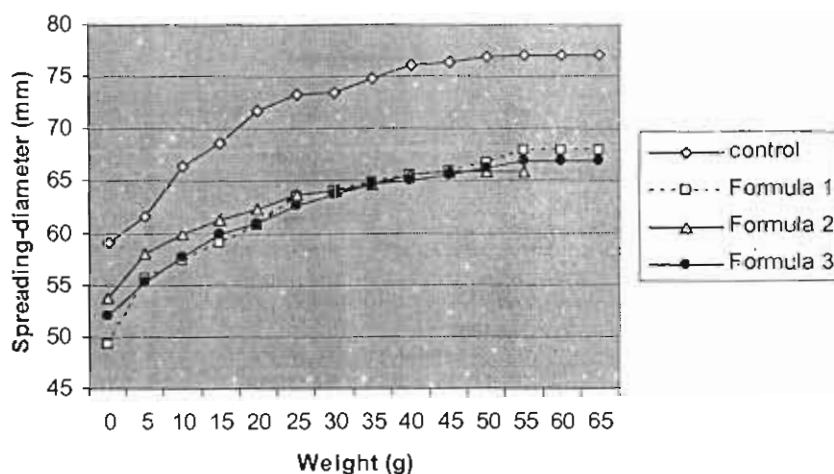


Figure 1. The spreading profile of arbutin gel preparation.

The ANOVA one way test of the arbutin effectivity in carbomer gel formulas found the value of $F_{\text{calculation}} (29.739) > F_{\text{table}} (4.07)$, and from the HSD test was found inhibition percent of control = formula 1 = formula 2 < formula 3.

Table 3. Spreading-capacity arbutin gel at 45 gram ballast weight

Formula	Spreading diameter mean ± SD (mm)
Control	76.33 ± 0.58
Formula 1	66.00 ± 0.00
Formula 2	66.00 ± 1.00
Formula 3	65.67 ± 0.58

Table 4. Spreading-ability of arbutin gel

Formula	Average slope ± SD (g/mm)
Control	0.3473 ± 0.02
Formula 1	0.2965 ± 0.01
Formula 2	0.2550 ± 0.01
Formula 3	0.2497 ± 0.01

Addition 3 and 5% w/w enhancer olive oil did not influence arbutin effectivity it can be caused by decreasing arbutin release from the more viscous bases. In addition of 7 % w/w olive oil was known that it increased arbutin penetration, showed by increasing inhibition percent of tyrosinase activity. It more is caused increasing concentration of arbutin in water phase, replacing water by olive oil in the formula.

Table5. Arbutin effectivity (% inhibition) in skin lightening gel

Formula	% Inhibition	
	Average \pm SD	% CV
Control	21.79 \pm 1.65	7.57
Formula 1	24.24 \pm 2.57	10.60
Formula 2	21.79 \pm 1.65	7.57
Formula 3	35.60 \pm 2.35	6.60

Conclusion

The addition of arbutin and olive oil affect the physical appearance (organoleptic and consistency) of skin lightening product as well as its spreading ability. Addition 7 % w/w olive oil increase arbutin effectivity by increased the inhibition percent value of enzyme tyrosinase activity in the skin lightening formula which was formulated in carbomer 940 gel base.

Acknowledgement

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