2nd ICHMS & 2nd LSC

PROCEEDING

ISBN: 978-602-757-793-0

PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center

UMY ICMHS Life Sciences SOCIETY

PROCEEDING

The 2nd International Conference of Medical and Health Sciences (ICMHS) and The 2nd Life Sciences Conference (LSC) 2016

"Towards a Better Quality of Life through Interdisciplinary Research"

Yogyakarta, 9th-10th December 2016
The Alana Hotel and Convention Center

TABLE OF CONTENT

Committee of ICMHS & LSC 2016

Supervisor	dr. Ardi Pramono, Sp.An, M.Kes
Chair	dr Iman Permana, M.Kes, Ph.D
Partner	Dr Zahid Iqbal, Ph.D
Secretary	Winnie Setyonugroho, S.Ked, MT, Ph.D
Secretariat	dr Bramantyas Kusuma H, M.Sc
	Futuh Hidayat, SEI
	Elida Tri Grahani, SE
Treasury	dr Hidayatul Kurniawati, M.Sc
Scientific section	Dr dr Ikhlas M Jenie, M.Med, Sc
	Dr Sri Nabawiyati Nurul Makiyah, S.Si, M.Kes
	Lia Fitriana, SP
Programme section	dr Ika Setyawati, M.Sc
	dr Imaniar Ranti, M.Sc
	dr Ahmad Ikliludin, SpM
Publication and Documentation section	dr April Imam Prabowo
	Arif Hadianto, ST
Logistic and Transportation	dr Muhammad Kurniawan, M.Sc
	Aris Nuryanta, SH
	Muhammad Ma'rifatullah Katiga Putra
	Dwi Hatmo Budi, S.IP
Fund Raiser	dr Maria Ulfa, MMR
	dr Akhmad Syaiful Fatah Husein, SpAn

Chair person of The 2nd International Conference of Medical and Health Sciences and The 2nd Life Sciences Conference 2016

Welcome to Jogja, sugeng rawuh!

For the second time, the Faculty of Medicine and Health Sciences Universitas Muhammadiyah Yogyakarta is going to conduct the 2nd International Conference of Medical and Health Sciences (ICMHS) this December in vibrant Yogyakarta, Indonesia. This year we are going to collaborate with the Life Sciences Society of Pakistan for their 2nd Life Sciences Conference (LSC) with Dr. Zahid Iqbal as the general secretary.

This year's conference theme "Towards a better quality of life through interdisciplinary research" will be celebrating an era of seamless interdisciplinary integration and collaboration in scientific innovations with the involvement of more extensive topics and disciplines in the conference. We aim to exhibit the products of that kind of approach in solving challenges, improving the quality of life, and creating sustainable developments.

We are happy to announce that our conference is filled with Invited speakers from Pakistan, United States of America, Uni Emirates Arab, Malaysia and Indonesia. Presentations will be conducted in oral as well as poster that covers topics from medicine, public health, dentistry, pharmacy, biomedical to agriculture. To put more credibility to the conference we are collaborating with Isra Medical Journal and the Asian Journal of Agriculture and Biology to publish selected papers from the event. Other paper will be published in the ISBN Proceeding book.

The last but not least, enjoy the conference, start networking and sharing ideas, and let immerse yourself to the heritage cultural ambient of Jogja, sumonggo!

Yogyakarta, 1st December 2016

dr. Iman Permana, M.Kes, Ph.D.

Dean of Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta

Assalamu'alaikum Wr. Wb.

Science, especially in the areas of health and life growing more rapidly. We need to work together in the research of various disciplines to the advancement of science and to provide benefits to human life.

After successfully organized international scientific meeting last year, the Faculty of Medical and Health Sciences Universitas Muhammadiyah Yogyakarta, held the second scientific meeting ICMHS along with "2nd Life Sciences Conference". In this second scientific meeting, FKIK UMY collaborates with various researchers, among others from Pakistan, Malaysia, and the United States. Taking the theme "Towards a better quality of life through interdisciplinary research" we hope to establish cooperation with various parties to be able to contribute ideas to the civilization of human life.

Finally, we congratulate the scientific meeting in the city of Yogyakarta Indonesia. Enjoy the beautiful city of Yogyakarta with priceless historical relics. We hope that this meeting can run smoothly and provide benefits to the advancement of knowledge.

Wassalamu'alaikum Wr. Wb.

Yogyakarta, 1st December 2016

dr. Ardi Pramono, M.Kes, Sp.An.

Rector of Universitas Muhammadiyah Yogyakarta

Assalaamu'alaikum Wr. Wb.

Ladies and Gentlemen,
Welcome to the 2nd International Conference on Medical and Health Science in conjunction with the 2nd Life Sciences Conference 2016
Welcome to Yogyakarta City of Tolerance
Our Faculty of Medicine and Health Sciences has been doing such international conference almost every year for the last ten years. This and other previous conferences are the things that supporting our vision as an excellence and Islamic university, a young and global university. We will always try to keep monitoring the development of science through sending more lecturers to do the sabbatical leave overseas, doing international research collaborations and also the international conference. Each department should do this strategy of internationalization so that each department has its own network. Faculty of medicine and health science is one of the most progressive units in implementing this strategy by inviting international experts on a regular basis. This program will certainly strengthen our vision.
International conference on medicine and health sciences is a smart choice to offer our lecturers access to the most recent development of the subjects. The participants will also gain the same knowledge and latest information on medicine and health sciences. As everyone knows that the development of science and technology are faster today compared to the previous period. Information technology, computer, and other development havefastened the transformation of medicine and health science into the different and more complex stage.

Cellular technology, for instance, can be used for several functions including those that directly impacts our daily life. There is no long distance call anymore today because cellular phone can do everything we need to contact other people far from where we stand anytime anywhere. People will finally innovate cellular phone for the sake of personal health services. We will in the future using our simple cellular phone to detect our body temperature, blood pressure, even how much fat we have in our body and how much it is supposed to be. We may also be able to check the health of our body without leaving our house and order medicine without going into the drug store. Everything is almost possible as long as we think hard for the better of people in the future. Enjoy the conference and don't forget to visit our rich tourist destinations, mountains, beaches or caves (underground waterways).

Thank you

Wassalaamu'alaikum Wr. Wb.

Prof. Dr. Bambang Cipto, MA

Keynote Speech

by Head of Provincial Health Office Special Region of Yogyakarta in International Conference of Medical and Health Sciences and Life Sciences Conference

The Alana Hotel and Convention Center, Yogyakarta, December 9-10, 2016

The honorable:

- Rector of Muhammadiyah University of Yogyakarta,
- The Dean of Medical and Health Sciences Muhammadiyah University of Yogyakarta,
- The chairman of organizing committee of the international conference of medical and health,
- Distinguished guests and colleagues.

Assalamu'alaikum Warahmatullahi Wabarakatuh,
First of all, we thank God for His blessings that today we may attend the International Conference of Medical Health Towards a Better Quality of Life Through Interdisciplinary Research in Yogyakarta.

My distinguished colleagues,
In Indonesia National Long Term Development Plan (2005-2024), the Indonesian Ministry of Health have determined a paradigm shift that have governed health services in health development plan. There has been a shift from Curative Health Services to Preventive and Promotive Health Services.
Recently, Indonesia suffers from a triple burden of diseases as health development challenges. The triple burden of diseases are: 1) the backlog of common infections, undernutrition, and maternal mortality; 2) the emerging challenges of non-communicable diseases (NCDs), such as cancer, diabetes, heart disease; and 3) mental illness, and the problems directly related to globalization, like pandemics and the health consequences of climate change.

Dear colleagues,
Here are some data that show several health problems in Indonesia:

1. Maternal mortility rate in 2015 is 4,809 cases, infant mortality rate in 2015 is 22,267 cases;
2. Regarding to children under the age of five, the national stunting rate is 37.2% which consists of 18% for very short dan 19.2% for short (Riskesdas 2013);

3. HIV testing coverage is 14% dan antiretroviral (ARV) therapy coverage is 65.58% (Directorate General of Disease Control and Prevention Ministry of Health, 2015);
4. Tuberculosis (TB) notification rate in 2015 is 73.5% and tuberculosis treatment success rate is 72% (Directorate General of Disease Control and Prevention Ministry of Health, 2015).

Distinguished guests,
Indonesia Health Development Program in 2015-2019 strengths in improving human quality life through Health Indonesia Program with family approach. The Indonesian Ministry of Health issued The Minister of Health Regulation (Permenkes) No. 39 Year 2016 as a Guideline of Implementation of Health Indonesia Program with Family Approach. This program has 12 main indicators as markers of a family health status.
Currently, many health programs have been implemented by Indonesian Ministry of Health, Provincial Health Offices, and District Health Offices. However, many health problems, some as mentioned above, still become health burdens. We may ask a question whether the programs that we conducted have answered the health problems we have in Indonesia.
It would be better if all health programs that we implement based on scientific health research, especially interdisciplinary research. The research should be related to detection, prevention, and treatment of diseases or problem solving for better health.
My dear colleagues,
Being a province with speciality, Special Region of Yogyakarta placed Traditional Medicine as one of the priority programs in Provincial Medium Term Development Plan (2017-2022). We still encounter many challenges in developing Traditional Medicine, especially in providing services which are based on scientific evidence.
Distinguished colleagues,
We look forward to results of interdisciplinary research which would support health problem solving, especially by developing traditional medicine in Yogyakarta. We believe that collaboration in interdisciplinary research would improve quality of human life.
Finally,
Thank you for your attention. We wish you a successful conference.

Wassalamu'alaikum Warahmatullahi Wabarakatuh,

On behalf of
the Head of Provincial Health Office
Special Region of Yogyakarta

Drg. Pembajun Setyaningastutie, M.Kes

SPEAKER OF INTERNATIONAL CONFERENCE

Zahid Iqbal
Al-Nafees Medical College Isra University Islamabad Campus Islamabad, Pakistan
"One Health Program for Public Health Benefit"

Prof. Dr. Abdul Khaliq
Professor, Department of Agronomy, University of Agriculture, Faisalabad
"Role of Agriculture in Poverty Alleviation of Rural Areas"

Fitri Arofati
Universitas Muhammadiyah Yogyakarta, Indonesia
"Continuing Professional Development of Practicing Nurses in Indonesia"

Tri Wahyuliati

Universitas Muhammadiyah Yogyakarta, Indonesia
"Diabetic Neuropathy - A Chance Towards A Better Treatment"

Mohammad Khalid Ashfaq
University of Mississippi, USA
"Natural Products –Use or Misuse"

Muhammad Mukhtar
American University of Ras Al Khaimah, United Arab Emirates
"Emerging Biotechnologies and Genomic Medicines in Human Health and Well-Being"

Muhammad Sasmito Djati
Brawijaya University Malang, Indonesia
"Herbal Medicine a Holistic Approach: in case of food supplement formulation of Sauropusandrogynus and Elephantopusscaberto modulate immune and hormonal system in pregnant Salmonella typhi infected mice"

REVIEWER

1. Dr. Zahid Iqbal, Ph.D (Isra University, Islamabad, Pakistan)
2. Prof. Dr. Abdul Khaliq (University of Agriculture, Faisalabad)
3. Dr. Mohammad Khalid Ashfaq, DVM, DTVM, MS, Ph.D (University of Mississippi, USA)
4. Dr. Muhammad Mukhtar, Ph.D (American University of Ras Al Khaimah, United Arab Emirates)
5. Dr. Ir. Muhammad Sasmito Djati, MS. (Brawijaya University Malang, Indonesia)
6. Fitri Arofiati, S.Kep., Ns., MAN., Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
7. Dr. SN Nurul Makiyah, S.Si., M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
8. dr. Iman Permana, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
9. Dr. dr. Ikhlas M. Jenie, M.Med, Sc (Universitas Muhammadiyah Yogyakarta, Indonesia)
10. Dr. dr. Arlina Dewi, M.Kes, AAK (Universitas Muhammadiyah Yogyakarta, Indonesia)
11. dr. Oryzati Hilman, M.Sc, CMFM (Universitas Muhammadiyah Yogyakarta, Indonesia)
12. Dr. Dra. Yoni Astuti, M.Kes, Ph.D (Universitas Muhammadiyah Yogyakarta, Indonesia)
13. Dr. drg. Tita Ratya Utari, Sp. Ort (Universitas Muhammadiyah Yogyakarta, Indonesia)
14. Dr. dr. Tri Wahyuliati, Sp.S, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
15. Dr. Elsye Maria Rosa, M.Kep (Universitas Muhammadiyah Yogyakarta, Indonesia)
16. Dr. dr. Titiek Hidayati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
17. Dr. Shanti Wardaningsih, M.Kep., Ns., Sp.Kep.J., Ph.D. (Universitas Muhammadiyah Yogyakarta, Indonesia)
18. Dr. dr. Sri Sundari, M.Ke (Universitas Muhammadiyah Yogyakarta, Indonesia)
19. Dra. Lilis Suryani, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
20. Drh. Tri Wulandari K, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
21. Dr. dr. Wiwik Kusumawati, M.Kes (Universitas Muhammadiyah Yogyakarta, Indonesia)
22. Sabtanti Harimurti, S.Si., M.Sc., Ph.D., Apt. (Universitas Muhammadiyah Yogyakarta, Indonesia)

SPEAKER OF INTERNATIONAL CONFERENCE

ICMHS-P-1-13

The Effect of Air Freshener Exposure on Corneal Thickness of White Rat (*Rattus norvegicus*)

Yuningtyaswari[1]*, Pajar Sigit Nugroho[2]

[1] Departement of Histologi, Faculty of Medicine and Health Science, UMY, Yogyakarta, Indonesia

[2] Faculty of Medicine and Health Science, UMY, Yogyakarta, Indonesia

*Email: yuningtyas_fkumy@yahoo.com

Abstract

The use of air freshener at this time more often found in various places, whether in offices, homes, and public areas. Air freshener contain various volatile organic compounds that are harmful to health, such as formaldehyde. Air freshener spray and gel air freshener is the form most commonly used. Chemical composition between the form of air freshener with each other is different. One organ that is susceptible to exposure of air freshener is the cornea of the eye. This study aims to assess the effects of air fresheners on the cornea of the eye and compare the effects of two forms of the air freshener.The subjects of this study were 18 rats, divided into three experimental groups, the control group (without treatment), the treatment group freshener spray and gel air freshener treatment group. In the treatment group performed freshener exposure for 8 hours / day for 15 days. Data is taken by measuring the thickness of the cornea under a microscope. The experimental results were analyzed using Kruskal Wallis test. Results of post hoc test showed a significant difference between the groups with the control gel air freshener $p=0.037$ ($p<0.05$), and between the spray air freshener to control $p=0.025$ ($p<0.05$). No significant difference demonstrated by a group of air freshener spray and gel with $p=0.631$ ($p> 0.05$). This suggests that the exposure of air freshener give negative effect to the histological changes in the cornea, but the effect of exposure spray and gel air freshener, there is no significant difference.

Keywords : air freshener, corneal thickness, formaldehyde

INTRODUCTION

Clean and fresh air is one of the necessities of human life. In fact it is hard to even obtain clean and fresh air, because air pollution occurs everywhere. One effort to obtain fresh air is to use air freshener. With air freshener, indoor air becomes fragrant and fresh.

The use of air freshener often found in various place, such as offices, homes, and public areas. Air freshener if used unwisely it potentially injurious to health. Freshener and cigarette smoke are the air pollutant agents often encountered indoors. Dangers of cigarette smoke on health are well known by the public, while the air freshener danger to health, has not been known. In general, people enjoy the thrill of fragrant and fresh emitted by air freshener.

The chemicals in many air fresheners contain a substance similar to the content of cigarette smoke (Bekman, S., 2010). Some of the chemicals found in air freshener that is synthesized petroleum, acetone, phenol, toluene, benzyl acetate, limonene, formaldehyde, toluene, benzaldehyde (De Vader, *et al*, 2009). According to a report from the National Institute of Occupational Safety and Health (NIOSH, 2013) dangerous chemicals in the air freshener from the research include formaldehyde. Formaldehyde can cause irritation to skin, eyes, nose, and throat. High levels of exposure may cause some types of cancer (EPA, 2013). Based on reports California Department of Public Health (2011), the content of air freshener that is most harmful to the eyes is formaldehyde. The eye is not resistant to formaldehyde vapors at a rate of 0.3 parts formaldehyde per million parts of air (0.3 parts per million, or 0.3 “ppm”). This exposure can cause red, teary, and burning eyes.

Spray air freshener and gel air freshener are the most used form of air freshener. Moreover, there are differences in the chemical composition between spray and gel air freshener. One part f the body that is most susceptible to the exposure of air freshener is the cornea. This study was aimed to assess the effect of air fresheners on the corneal thickness, and compare the effect of spray and gel air freshener.

MATERIALS AND METHODS

The study design is experimental, post-test only control group design. The study was conducted on 18 white rats (Rattus norvegicus) male, weight 200-300gram, Wistar strain, were divided into three experimental groups, the negative control group (without exposure of air freshener), the treatment group freshener spray (P1), and the treatment group freshener gel (P2). In the treatment group performed fragrances exposure for 8 hours / day for 15 days. Air freshener used for exposure in the study came from the same factory,On day 16, subjects were sacrificed, taken his eye (cornea), fixed with 10% formalin solution, then histological preparations made by the method of paraffin

blocks, with hematoxylin eosin staining techniques. Histological observation cornea was performed using a light microscope, at a magnification of 40x10, at 5 visual field. Measurement of the thickness of the cornea was carried out with the help of software OptiLab, with micrometer-scale measurements. Data were analyzed statistically using Kruskal wallis statistical test, followed by Mann Whitney Test.

RESULTS

Kruskal Wallis statistical test results to the data the thickness of the cornea subject, the value p = 0.038 ($p<0.05$) at 95% confidence level. Statistical test results showed that there are significant differences in the thickness of the cornea between the three groups of subjects were compared. Post hoc with Mann Whitney test showed a significant difference between the K groups and the treatment groups P2 (p=0.037) and between K group and the treatment group P1 (p=0.025). No significant difference was demonstrated between the treatments group P1 and P2 (p=0.631).

Summary of statistical test corneal thickness of subjects in this study can be seen in Table 1 below:

Table 1: Thickness of the cornea subjects (μm)

Group	Mean ± SD
Spray air freshener exposure group of (P1)	99.1850 (±6.0129) [b]
Gel air freshener exposure group of (P2)	94.0167 (±7.0640) [b]
Control Group (K)	78.4850 (±2.6617) [a]

Description: [a, b] different letters indicate significant differences in the statistical test Mann Whitney, at 95% confidence level.

Corneal Histology subject of this study can be seen in Figures 1, 2 and 3 below:

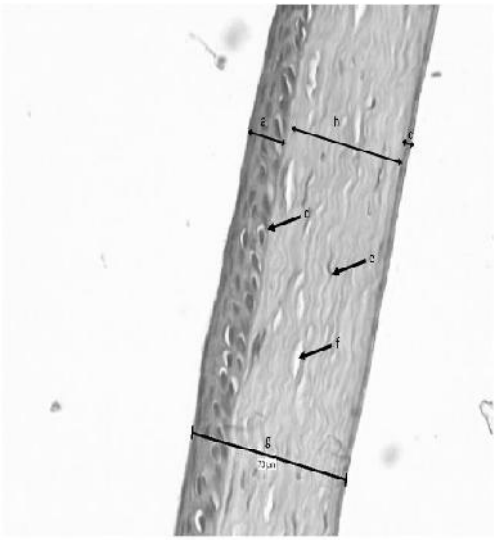

Figure 1. Corneal histology of control group (K), (HE, 40x10) Caption: a. Anterior epithelium, b. Stroma, c. Posterior epithelium, d. Bowman's membrane, e. Keratinocytes, f. Vacuolization, g. Corneal Thickness.

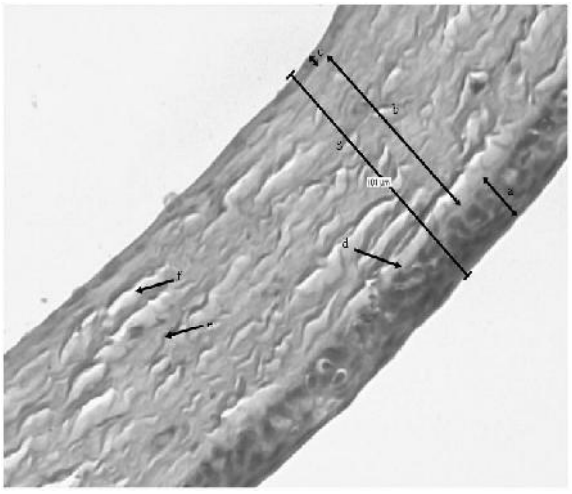

Figure 2. Corneal histology of spray air freshener exposure group of (P1), (HE, 40x10) Caption: a. Anterior epithelium, b. Stroma, c. Posterior epithelium, d. Bowman's membrane, e. Keratinocytes, f. Vacuolization, g. Corneal Thickness

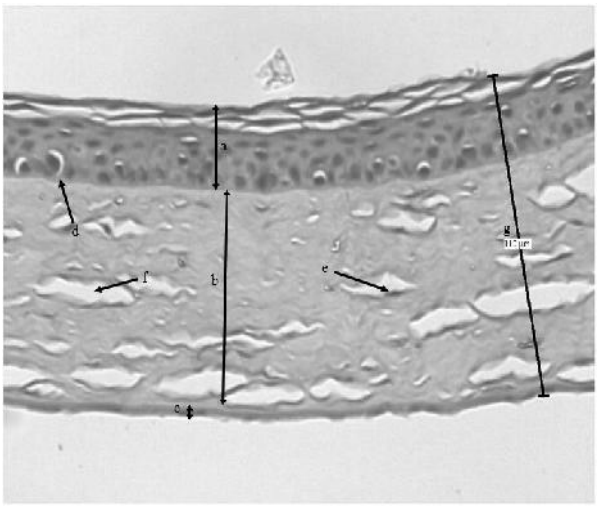

Figure 3. Corneal histology of gel air freshener exposure group of (P2), (HE, 40x10) Caption: a. Anterior epithelium, b. Stroma, c. Posterior epithelium, d. Bowman's membrane, e. Keratinocytes, f. Vacuolization, g. Corneal Thickness

DISCUSSION

The results of measuring the thickness of the cornea subject of the control group (K) as compared to the treatment group (P1 and P2) showed a statistically significant difference. Subject corneal treatment group (P1 and P2) thicker significantly compared with the control group. This suggests that exposure to spray or gel air freshener effect on corneal thickness. Cornea is a part of the organ of the eye which first exposed to the outside environment. Cornea is very easily impaired by the adverse effects of air pollution. The toxic effect of the concentration of chemical substances in the air freshener is a result of air freshener exposure by inhalation, ingestion, dermal contact and direct exposure to the visual system. Air freshener direct exposure to the cornea without protection can lead to absorption of toxic materials on the visual system and the network is likely to cause toxicity to the eye (Cater, et al., 2006).

Exposure air freshener cause thickening of the cornea of the eye. The results are consistent with research conducted by Cater, K. et al (2006) indicated that from the research reveals thickening of the cornea that has been exposed to the different types of freshener.

One of the chemicals contained in air freshener is formaldehyde. Formaldehyde is a compound that is responsible for the moderate to severe irritation of the cornea. Formaldehyde is generally known for its ability to react with proteins, fats, and nucleic

acids. Exposure to formaldehyde produces rapid metabolic imbalances and covalent bonding to DNA, RNA and proteins which cause cytotoxicity presentation. Formaldehyde can significantly increase the thickness of the cornea than other substances contained. In more severe irritation, formaldehyde capable of causing corneal edema involving the stroma even endothelium (Maurer, 2002).

Trauma to the cornea will trigger the immune response in the cornea. Anterior epithelium is the first wall that will show a reaction if there is trauma. Reaction trauma to the cornea is the process of cell proliferation to close the wound happened. Trauma by chemicals freshener can come to the stromal layer of the cornea. The first response made by the stroma is the emergence of dendritic cells to recognize the trauma that occur and initiate the next process to form fibers fibroblastic on the injured area. Furthermore, keratinocytes undergo migration and proliferation, in order to increase the production of fibroblasts and keratinocytes initiate activation of the surroundings. Keratinocytes have an important role in the healing of trauma stroma. Keratinocytes synthesize and deposit extracellular matrix degradation to cells damaged by trauma, as well as remodeling the extracellular cell and tissue around the wound. So as of this process can lead to a thickening of the cornea by exposure freshener. Some activating factor that activates the growth of epithelial cells and keratinocytes that fibroblast growth factor (FGF), interleukin-1 (IL1), tranforming growth factor, insulin, retonoic acid, and LPA. Once activated, the keratinocytes showed a variety of cellular responses including increased uptake of tritiated thymidine (initiation increased proliferation keratinocytes and epithelial anterior), the initiation of protease, activation of collagenase, phagocytosis, interferon, prostaglandins, fibronectin, collagen and proteoglycans secretion (Tasman, 2007).

Toxicity shown various types of air freshener is not only derived from the basic material, but from material enhancements. In the liquid air freshener, toxicity due to the addition of solvents. Toxicity increases in the use of liquid air freshener works by spraying. This is because the spray air freshener also contribute to added pressure gas (propellant) and produce highly concentrated chemicals (Hanson, et al., 2008).

Chemical particles gel air freshener, in its use will be through the process of evaporation becomes extremely small sized particles of approximately <0.1 lm. Liquid Aerosol particles have relatively large size which is about> 1 μm sometimes to be seen by a normal eye, so that the air freshener aerosol particles have the size and concentration of greater than the chemical particles or solid gel air freshener. This has caused differences between the mean thickness of the cornea is made of exposure to the air freshener gel or liquid (Ruzer & Harley 2012). In this study, subjects cornea P1 group (spray air freshener group) had thicker corneas than P2 group (gel air freshener), although the difference was not statistically significant.

CONCLUSION

The exposure of air freshener increases the thickness of rats' cornea. However, there is no significant difference in the corneal thickness between spray air freshener group dan gel air freshener group.

REFERENCES

1. Bekman,S. (2010). *Fragrance: A Growing Heakth and Environmental Hazard. Prt*. (online). Accessed Febuary 30, 2012. Available from http://bit.ly/2nYWu9D
2. De Vader, Christy L & Barker, Paxson. (2009). *Fragrance in the Workplace is the New Second-Hand smoke*. ASBBS Annual Conference: Las Vegas, Vol 16, No.1. Accessed March 30, 2012, available from http://asbbs.org/files/2009/PDF/D/De%20VaderC.pdf
3. National Institude of Occupational Safety and Health (NIOSH) . (2013). *Building Air Quality.* Accessed April 2, 2014, available from http://www.cdc.gov/niosh/topics/indoorenv/
4. Environmental Protection Agency (EPA). (2013). *Formaldehida Emissions from Composite Wood Products*. Accessed April 2, 2014, available from http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OPPT-2012-0018-0511.
5. California Department of Public Health (CDPH). (2011). *Formaldehyde*. Accessed April 22 2014, from http://www.cdph.ca.gov/programs/hesis/Documents/formaldehida.pdf
6. Cater. K., Reyes, C., and Harbell, J. (2006). Fragrance Impact on Marketed Air Freshener Product by BCOP Assay and Histology. *45th Annual Society of Toxicology Meeting San Diego, CA*. Accessed March 28, 2012, available from http://bit.ly/2gAYfGJ
7. Maurer J.K., Parker R.D. (2002). Extent of Initial Corneal Injury as the Mechanistic Basis for Ocular Irritation: key findings and recommendations for the development of alternative assays. *Regulatory Toxicology and Pharmacology* 36, pp.106-117
8. Tasman, W., Jaeger, E, A. (2007). *Duane's Ophtalmology 2007 eds*. Accessed January 28, 2015, from http://bit.ly/2g461fT
9. Hanson, Glen , Venturelli, Peter J., & Fleckenstein,Annette E. (2008). *Drugs and Society 10th Edition.* Jones and Bartllet Publisher: London. Hal. 372. Accesed on November 26, 2012 available from http://bit.ly/2hd0oMS
10. Ruzer, L.S., et, al. (2012). *Aerosol chemistry and physics: an indoor perspective*. Aerosols Handbook: Measurement, Dosimetry, and Health Effects, 2nd Edition. Accessed on December 14, 2015, from http://bit.ly/2nYWu9D