

DOI:

10.22301/IJHMCR.2528-3189.826

Article can be accessed online on:
<http://www.ijhmcr.com>

ORIGINAL ARTICLE

INTERNATIONAL JOURNAL
OF HEALTH MEDICINE AND
CURRENT RESEARCH

THE ATTRACTIVE DIFFERENCES OF TWO TYPES OF HERBAL MEDICINE FROM ZINGIBERACEAE FRUIT (*GOLOBE HALMAHERA*)

Hendry Izaac Elim^{1,2,3,4,5}, and Arend L. Mapanawang^{6*}

¹ Nanomaterials for Photonics Nanotechnology Laboratory (*N4PN Lab.*), Department of Physics, Faculty of Mathematics and Natural Sciences, Pattimura University, Jl. Ir. M. Putuhena, Poka, Ambon, Indonesia 97233

² Nanotechnology Research Center and Innovative Creation (*PPNRI-LEMLIT*), Research Center of Pattimura University, Pattimura University Campus, Jl. Mr. CHR. Soplanit, Rumah Tiga, Ambon, Indonesia 97234

³ Multidisciplinary Research Center of Excellence (*MrCE*), *UNPATTI*, Jl. Chr. Soplanit, Rumah Tiga, Ambon, Indonesia 97234 Jl. Ir. Martinus Putuhena, Poka, Ambon, Indonesia 97233

⁴ Maritime and Marine Science Center of Excellence (*MMSCE*) Jl. Dr. Leimena, Ambon, Indonesia 97234

⁵ Theoretical Physics Laboratory, Department of Physics, Pattimura University, Jl. Ir. M. Putuhena, Poka, Ambon, Indonesia 97233

⁶ Department of Pharmacy, College of Health Sciences, Medika Mandiri Foundation, Halmahera, Indonesia

ARTICLE INFO

Article History:

Received 18th January, 2017

Received in revised form

28th February, 2018

Accepted 9th March, 2018

Published online 31th March, 2018

Key words:

Herbal medicine, Nanomedicine,
Attractive differences, Prominence
antioxidant.

*Correspondence to Author:

Arend L. Mapanawang

Department of Pharmacy, College of
Health Sciences, Medika Mandiri
Foundation, Halmahera, Indonesia

E-mail:

arend_mapanawang@yahoo.com

ABSTRACT

Herbal medicine is attractive due to its advantages such as its stable condition for a long time packaging about 5 years, and its safety usage because of the natural excellent ingredients. Currently, nanomedicine has been worldwide topic under intensive ongoing research for the effective human health improvement. In this letter, the attractive differences of two types of herbal medicine from zingiberaceae fruit (*Golobe Halmahera*) namely as *rambutan Golobe Halmahera*, and original *Golobe Halmahera* are discussed with their prominent applications as herbal medicine. Moreover, a preliminary work on the healing system of original *Golobe Halmahera* in reducing a large the number of HIV virus is discussed with its impact in **CD4 T cell** of lymphocyte.

Copyright © 2018, **Arend L. Mapanawang**. This is an open access article distributed under the creative commons attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Hendry Izaac Elim^{1,2,3,4,5}, and Arend L. Mapanawang^{6*}, 2018 "The Attractive Differences Of Two Types Of Herbal Medicine From Zingiberaceae Fruit (*Golobe Halmahera*)", *International Journal of Health Medicine and Current Research*, 3, (01), 826-834.

INTRODUCTION

Since the discovery of deathly killing virus called as **HIV** retrovirus by **R.C. Gallo at al.** in **1984** [1-4], the victims of the earth

people have recently been **over 30 million people**. On the other hand, even many efforts from different multidisciplinary scientists in **the last 34 years**, the medicines for healing such dangerous **HIV** virus have not fully discovered yet. For example, the commonly used medicine for the **HIV** patients is *lamivudine* **invented on 17th November 1995** could only protect the infected red blood cells up to ~50% inhibition. In addition, various medicines for handling such human **DNA** damaging virus have been fabricated such as *zidovudine* (**27th September 1997**), *dolutegravir* (**13rd August 2013**), and *raltegravir* (**26th May 2017**). However, such new retrovirus medicines are still in their limitation of just protecting the growth of the HIV viruses, and not killing or stopping the virus. On the other hand, the rapid improvement of nanoscience and its nanotechnology engineering in the last 58 years since **R.P. Feynman, a CALTECH-USA physicist and 1965 Nobel laureate** published his paper in **1960** [5] have been influencing various multidisciplinary scientists [6-10] and physicists in particular [11-27] to advance such frontier science and technology through a very extraordinary sensitivity of nonlinear optics characteristics of a nanostructure material using femtosecond laser technology and its optical setup in this 21st century. Recently, the nanoscopic understanding of a molecule particularly in conjunction with the interactions system among tens of two to three types atoms such as **4H₂O molecules** [28-29] has opened a deeper understanding of nanomedicine [30-31].

Here in this paper, we present a possibility of developing a novel herbal medicine that has ability to not only enhance the human immune system from the **HIV** attacking, but also killing the virus. In the beginning, the search of such new potential herbal medicine was identified by the invention of the largest antioxidant content of *Golobe Halmahera* as large as **6.54 ng/mL** [32]. Moreover, the ongoing study of this type of zingiberaceae fruits originally found in Halmahera island, the largest island among ~400 islands in the North Maluku province, Eastern part of Indonesia has been then carried out. It should be pointed out that the largest island is one of **the 8 important areas** (1. Morotai, 2. Halmahera, 3. Ternate, 4. Tidore, 5. Bacan, 6. Obi, 7. Mangole, and 8. Sanana) in **the North Maluku province** which are full of spices trees such as nutmeg and clove trees, respectively. The present letter

is limited by the discussion of the attractive differences among two types of zingiberaceae fruits namely as *rambutan Golobe Halmahera*, and original *Golobe Halmahera* as well as their possibility to hinder the growing of **HIV** virus.

Experimental Technique

In order to investigate the differences of the two types of *Golobe Halmahera*, the physical, chemical and optical characteristics were employed. The physical behavior of the two types of zingiberaceae fruit was identified using the physical appearances of both fruits. While chemical character of the fruits were investigated by using a Fourier transform infrared (**FTIR**) spectrometer **MB3000, USA** at **Pattimura university** as depicted in **Fig. 1** in physics department as well as the use of another laboratory **FTIR** equipment (**Shimadzu, Japan**) such as in **Premata IPB Laboratory**, Bogor, West Java province, Indonesia. Therefore, the chemical bondings content in the fruits can be obviously judged. Furthermore, the optical characteristics were searched by identifying the color changes when the herbal medicine was interacted with another substances such as water, *betadine* (a standard medicine to clean up and heal a wound in Indonesia), and so forth.



Figure 1. FTIR spectrometer MB3000, USA at Pattimura university in Physics Department located on the 3rd floor of Solid state Physics laboratory.

Figure 2 describes the physical differences of the two types of *Golobe Halmahera* before the further investigations on making a herbal medicine.

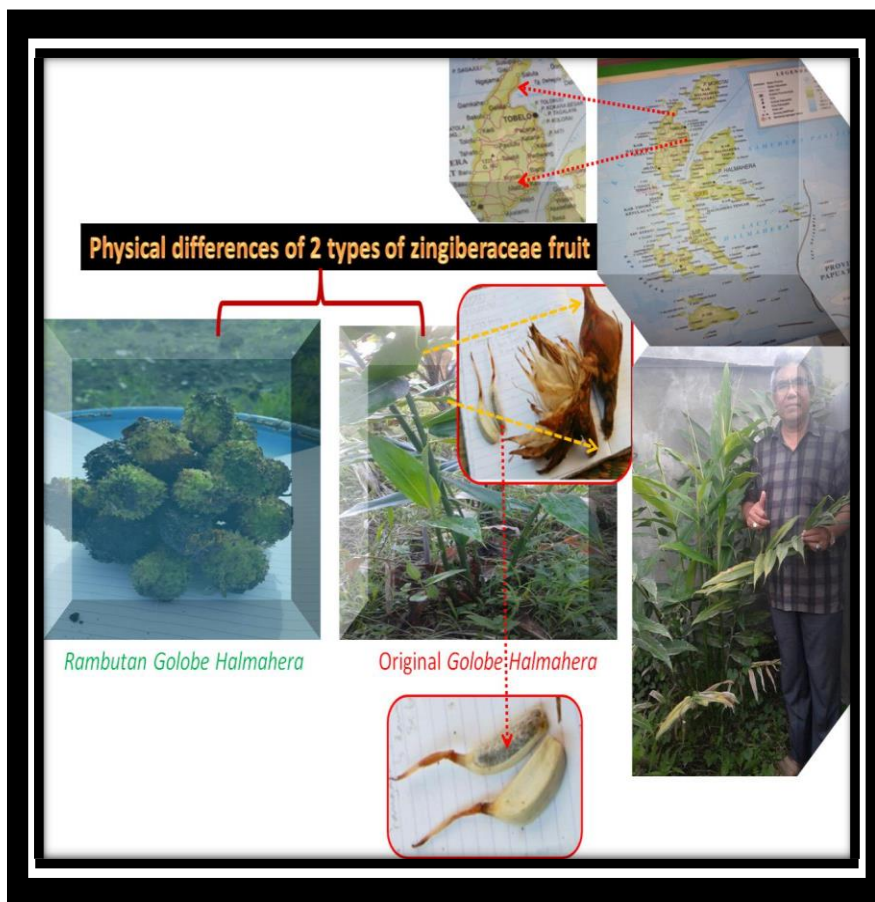


Figure 2. Physical differences between *rambutan Golobe Halmahera* and original *Golobe Halmahera*. The inset depicts the location of the fruit trees in Halmahera island of North Maluku province.

In order to study the healing system of the herbal medicine based *Golobe Halmahera*, the MTT test which is a method with MDEM (Dulbecco's modified eagle medium) with the help of mass spectrometer as the additional apparatus to identify the sample of herbal medicine conducted in Premata IPB Laboratory, Bogor, West Java province, Indonesia. While the test experiment of this herbal medicine for its resistance against normal cancer was conducted in Indonesia Science and Technology Laboratory (BPPT Lab.), Serpong, West Java province.

RESULTS AND DISCUSSION

Figure 3 shows an illustration about the reason why HIV retrovirus is very tough to be killed during the last 34 years. One of the significant characters of this virus is that it first damages the human DNA, and then grows inside the DNA before replicating her new descendant. Because of this DNA damage, the whole body of human being will have a very weak immune system as a result in many troubles of the whole body parts.



Figure 3. The illustration of the impact of DNA damage due to HIV virus for the whole connected human body parts. The damage or modifying DNA as a part of human chromosome inside the red blood cell will make a new replicated HIV virus exactly the same as the former carrier of HIV virus. The more replicated HIV virus, the more white blood cells are getting weaker so that the immune system in the body is weaker as well.

In Fig. 4., the chemical behaviors of the herbal medicine based *Golobe* Halmahera fruit show that there are few significant differences between *rambutan Golobe* Halmahera and original *Golobe* Halmahera. The first obvious different is in the carbon-carbon triple bonding (C≡C). In the original *Golobe* Halmahera based medicine diluted in a type water, there is absorption improvement of the C≡C bonding, while such bonding in *rambutan Golobe* Halmahera based medicine shows significant weak absorption at ~2300 cm⁻¹ or a big transmittance (T ~36%). Secondly, the

carbon-carbon double bonding (C=C) in the original *Golobe* Halmahera observed at 1697 cm⁻¹ shows a prominent absorption, while such peak was not observed in *rambutan Golobe* Halmahera. Finally, the contribution of the C-H bonding is just a small part found only in the original *Golobe* Halmahera based medicine. This means that the highly antioxidant (6.54 ng/mL [32]) of such medicine contributed from flavonoid which is rich of carbon structure can make a bound with hydrogen from water molecule.

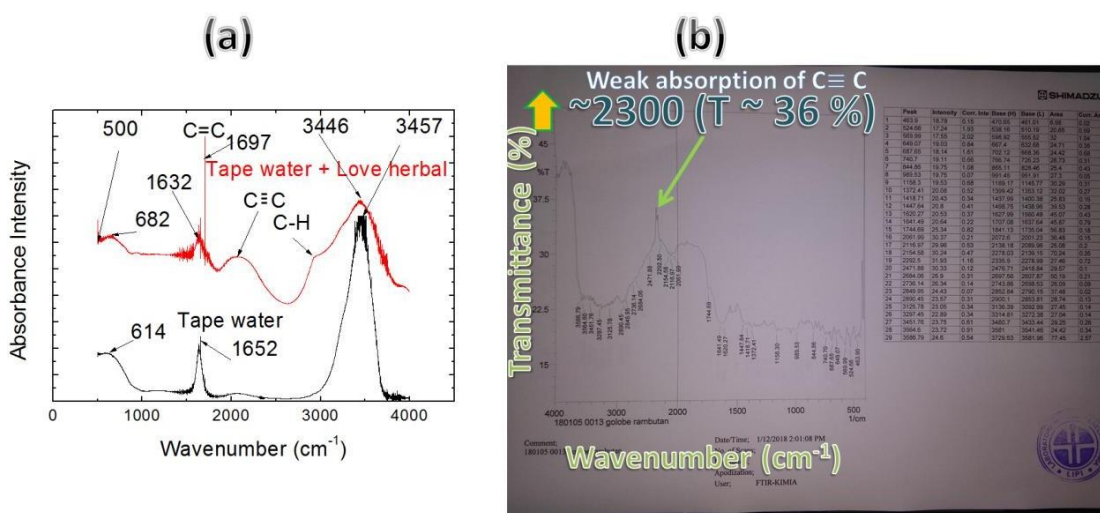


Figure 4. Chemical characters of two different types of *Golobe* Halmahera measured using 2 types of FTIR spectrometers (MB3000, USA and Shimadzu, Japan): the original type versus *rambutan* type. The various types of chemical bonding show the content of the medicines contributed to antioxidant such as flavonoid (a chemical structure constructed from 15C and 20), and another important part of chemical medicine.

Figure 5 depicts how the amount of HIV virus was decreased its numbers by the presence of additional concentration of original *Golobe* Halmahera herbal medicine. The hidden HIV virus was firstly observed by Yukl, et al. in CD4 T cell of lymphocyte [31], a small part of leukocyte closely related with the immune system of human blood. That was the additional reason why HIV virus which damages the DNA of human cell located inside CD4 T cell of lymphocyte was not so easy to be removed by many

types of medicines including nanomedicines. However, in this study one can come up with a significant contribution of the use of one of the highest antioxidant herbal medicine can protect human body by enhancing a very high immune system in human bloods (about 8 types of bloods flowing inside blood vessel as illustrated in Fig. 5) from the HIV destruction in the CD4 T cell of lymphocyte.

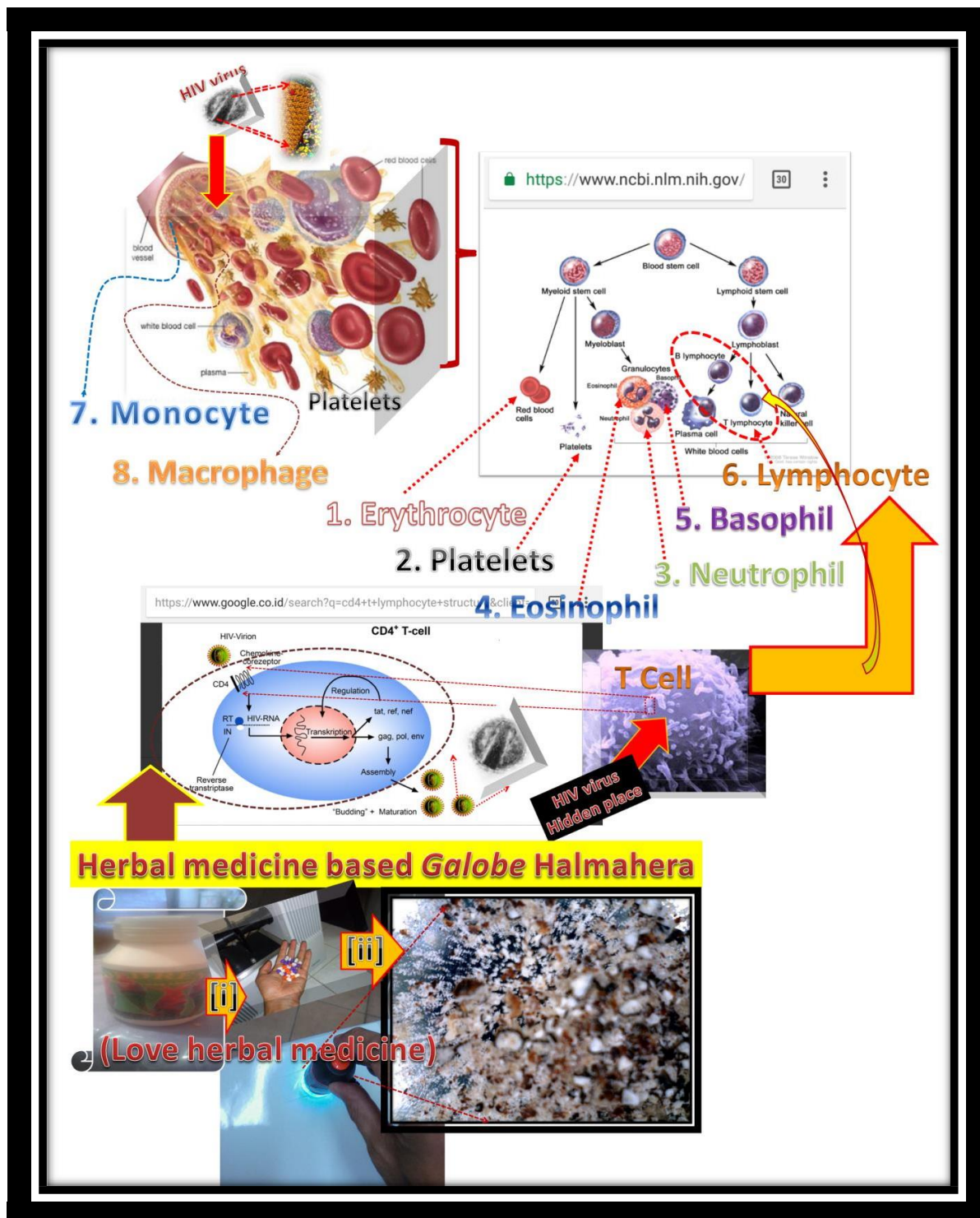


Figure 5. Illustration on how a love herbal medicine based original *Golobe Halmahera* can protect and enhance the immune system of human bloods from the attack of **HIV** virus especially on its hiding and growing inside the **CD4 T cell** of lymphocyte.

Figure 6 shows how the investigation impact of such very high antioxidant herbal medicine contributes to combat **HIV** retrovirus. Based on the contrast variation of two different concentration of the

herbal medicine, the significant reducing of the retrovirus was obtained in the high concentration herbal medicine of 800 ppm.

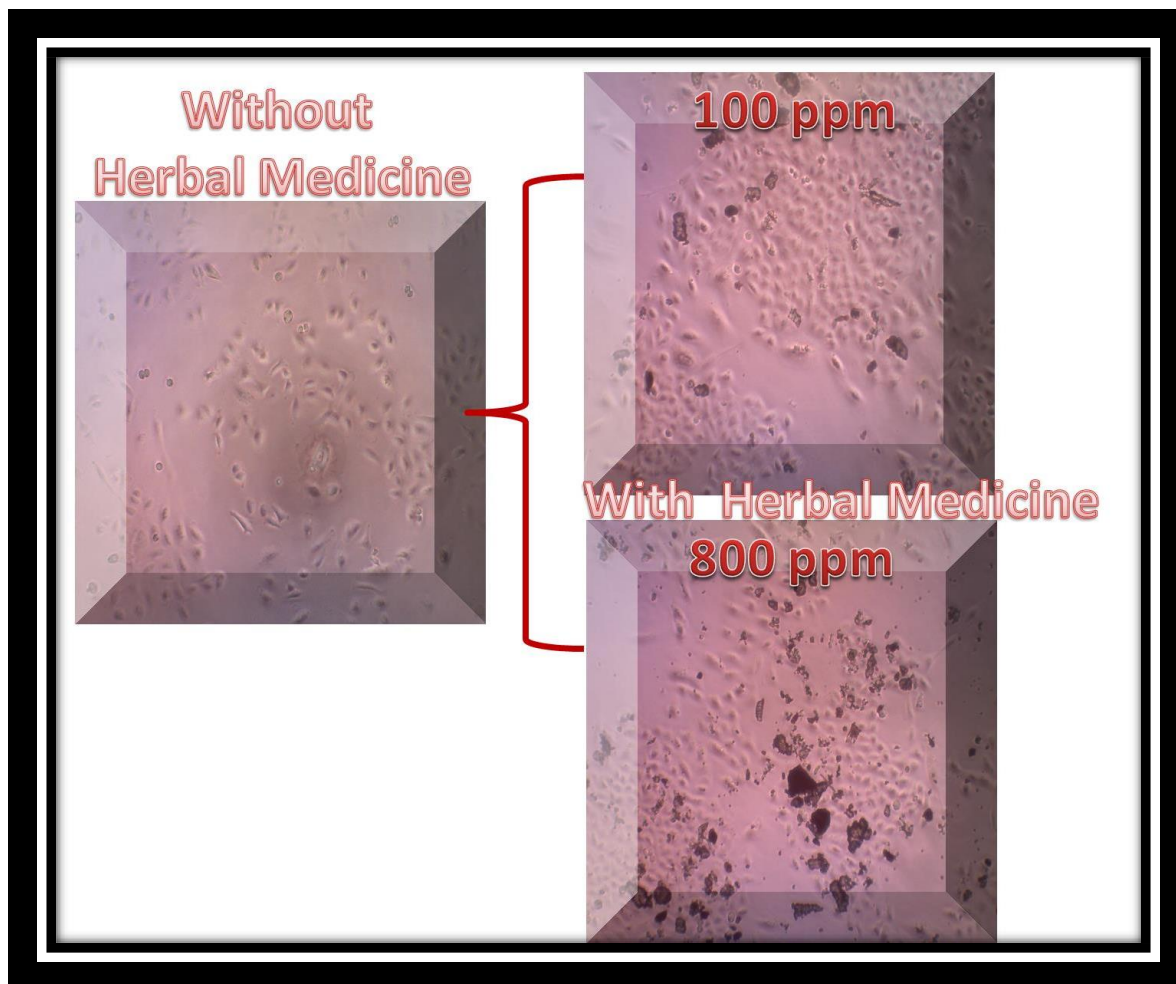


Figure 6. The observation on the herbal medicine based *Golobe* Halmahera in combating the HIV virus using two different contrast concentrations of 100 ppm, and 800 ppm, respectively.

Summary

In conclusion, the contrast different between two types of original *Golobe* Halmahera and *rambutan Golobe* Halmahera has been discussed. The significant differences between both types were identified using tree kinds of comparisons involving physical, chemical and optical properties, respectively. Physical behavior differences of both sides can easily be distinguished using naked eyes in which their fruit shapes were absolutely different. While the chemical substance different of both fruits was only identified in details using FTIR spectrometer. Furthermore, the medical optics system of their medicine response to combat HIV virus was observed using cells photos by interacting it with fresh HIV virus in laboratory. We obtain in general that original *Golobe* Halmahera with the highest antioxidant content mainly due to flavonoid is more effective due to its large inhibition contributed by at least 2 main chemical bondings C=C, and C C sourced from flavonoid. Further investigation is needed in having more understanding of such important herbal

medicine.

ACKNOWLEDGEMENTS

H.I.E as one the author in this paper is grateful to thank *Riset Unggulan Daerah* 2017- 2018 research grant No. 741/UN13/SK/2017 funded by Pattimura university, Ambon, Indonesia.

REFERENCES

- [1]. Popovic, M., Sarngadharan, M. G., Read, E., and Gallo, R.C., Detection, Isolation, and Continuous Production of Cytopathic Retroviruses (HTLV-III) from Patients with AIDS and Pre-AIDS, *Science* **224** (4648), 497-500 (1984).
- [2]. Gallo, R.C., Salahuddin, S.Z., Popovic, M., Shearer, G.M., Kaplan, M., Haynes, B.F., Palker, T.J., Redfield, R., Oleske, J., Safai, B., White, G., Foster, P., and Markham, P.D., Frequent Detection and Isolation of Cytopathic

- Retroviruses (HTLV-III) from Patients with AIDS and at Risk for AIDS, *Science* **224** (4648), 500-503 (1984).
- [3]. Schüpbach, J., Popovic, M., Gilden, R.V., Gonda, M.A., Sarngadharan, M.G., and Gallo, R.C., Serological Analysis of a Subgroup of Human T-Lymphotropic Retroviruses (HTLV-III) Associated with AIDS, *Science* **224** (4648), 503-505 (1984).
- [4]. Sarngadharan, M.G., Popovic, M., Bruch, L., Schüpbach, J., and Gallo, R.C., Antibodies Reactive with Human T-Lymphotropic Retroviruses (HTLV-III) in the Serum of Patients with AIDS, *Science* **224** (4648), 506-508 (1984).
- [5]. Feynman, R.P., There's Plenty of Room at the Bottom, *Engineering and Science*, Caltech, February (1960); reprinted in Hey, A.J. G., Ed., 1998, *Feynman and Computation* (Reading, MA; Perseus Books); reprinted in *IEEE J. MEMS*, p.1 (1992).
- [6]. Paris, L., Magni, R., Zaidi, F., Araujo, R., Saini, N., Harpole, M., Coronel, J., Kirwan, D.E., Steinberg, H., Gilman, R.H., Petricoin III, E.F., Nisini, R., Luchini, A., and Liotta, L., Urine lipoarabinomannan glycan in HIV-negative patients with pulmonary tuberculosis correlates with disease severity, *Sci. Transl. Med.* **9**, eaal2807 (2017).
- [7]. Liu, Y., Sheng, J., Fokine, A., Meng, G., Shin, W.-H., Long, F., Kuhn, R.J., Kihara, D., and Rossmann, M.G., Structure and inhibition of EV-D68, a virus that causes respiratory illness in children, *Science* **347** (6217), 71-74 (2015).
- [8]. Yin, Y., Manoury, B., and Fähræus, R., Self-Inhibition of Synthesis and Antigen Presentation by Epstein-Barr Virus-Encoded EBNA1, *SCIENCE* **301**, 1371-1374 (2003).
- [9]. Ohsawa, I., Yamagata, K., Ishikawa, M., Takahashi, K., Watanabe, M., Nishimaki, K., Katsura, K.-I., Katayama, Y., Asoh, S., and Ohta, S., Hydrogen acts as a therapeutic antioxidant by selectively reducing cytotoxic oxygen radicals, *Nature Medicine* **13**, 688-694 (2007).
- [10]. Wang, G., McCain, M.L., Yang, L., He, A., Pasqualini, F.S., Agarwal, A., Yuan, H., Jiang, D., Zhang, D., Zangi, L., Geva, J., Roberts, A.E., Ma, Q., Ding, J., Chen, J., Wang, D.-Z., Li, K., Wang, J., Wanders, R.J.A., Kulik, W., Vaz, F.M., Laflamme, M.A., Murry, C.E., Chien, K.R., Kelley, R.I., Church, G.M., Parker, K.K., and Pu, W.T., Modeling the mitochondrial cardiomyopathy of Barth syndrome with induced pluripotent stem cell and heart-on-chip technologies, *Nature Medicine* **20**, 616-623 (2014).
- [11]. Yang, J., Elim, H.I., Q.B. Zhang, Lee, J.Y., and Ji, W., Rational Synthesis, Self-Assembly, and Optical Properties of PbS-Au Heterogeneous Nanostructures via Preferential Deposition, *J. Am. Chem. Soc.* **128**, 11921-11926 (2006).
- [12]. Elim, H.I., Talapessy, R., and Sari, N.A.B.R., WATER CONTAMINATED CaCO₃ AND ITS OPTICAL PROCESS OF AGGREGATION, *International Journal of Health Medicine and Current Research*, (*IJHMCR*) **1** (1), 102-108 (2016).
- [13]. Elim, H.I., Zhu, Y.W., and Sow, C.H., Length Dependence of Ultrafast Optical Nonlinear in Vertically Aligned Multiwalled Carbon Nanotube Films, *J. Phys. Chem. C* **120**(31), 17733-17738 (2016).
- [14]. Elim, H.I., Cai, B., Sugihara, O., Kaino, T., and Adschiri, T., Rayleigh scattering study and particle density determination of high refractive index TiO₂ nanohybrid polymer, *Phys. Chem. Chem. Phys.* **13** (10), 4470 – 4475 (2011).
- [15]. Elim, H.I., Jeon, S.-H., Verma, S., Ji, W., Tan, L.-S., Urbas, A., and Chiang, L.Y., Nonlinear Optical Transmission Properties of C₆₀ Dyads Consisting of a Light-Harvesting Diphenylaminofluorene Antenna, *J. Phys. Chem. B Letters* **112**, 9561-9564 (2008).
- [16]. Elim, H.I., Ouyang, J., Goh, S.H., and Ji, W., Optical limiting based materials of mono-functional, multi-functional and supramolecular C60-containing polymers, *Thin Solid Film* **477**, 63-72 (2005).
- [17]. Elim, H.I., Cai, B., Kurata, Y., Kaino, T., Sugihara, O., Adschiri, T., Chu, A.-L., and Kambe, N., Refractive index control and Rayleigh scattering properties of transparent TiO₂ nanohybrid polymer, *J. Phys. Chem. B* **113** (30), 10143–10148 (2009).
- [18]. Cai, B., Sugihara, O., Elim, H.I., Kaino, T., and Adschiri, T., A Novel Preparation of High-Refractive- Index and Highly Transparent Polymer Nanohybrid Composites, *Applied Physics Express* **4**, 092601 (2011).
- [19]. Bystrzejewski, M., Lange, H., Huczko, A., Elim, H.I., and Ji, W., Study of the optical limiting properties of carbon-encapsulated magnetic

- nanoparticles, *Chem. Phys. Lett.* **444**, 113-117 (2007).
- [20]. Pong, B.-K., Elim, H.I., Chong, J.-X., Ji, W., Trout, B.L., and Lee, J.Y., New Insights on Nanoparticle Growth Mechanism in Citrate-Reduction of Gold(III) Salt: Formation of Au Nanowire Intermediate and its Nonlinear Optical Properties, *J. Phys. Chem. C* **111**, 6281 (2007).
- [21]. Liu, Y.J., Sun, X.W., Elim, H.I., and Ji, W., Effect of liquid crystal concentration on the lasing properties of dye-doped holographic polymer-dispersed liquid crystal transmission gratings, *Appl. Phys. Lett.* **90**, 011109 (2007).
- [22]. Zhu, Y.W., Elim, H.I., Foo, Y.-L., Yu, T., Liu, Y.J., Ji, W., Lee, J.-Y., Shen, Z.X., Wee, A.T.S., Thong, J.T.-L. and Sow, C.H., ZnO Nanoparticles Beaded Multiwalled Carbon Nanotubes: For Ultrafast Nonlinear Optical Switching, *Advanced Materials* **18** (5), 587-592 (2006).
- [23]. Chin, K.C., Gohel, A., Chen, W.Z., Elim, H.I., Ji, W., Chong, G.L., Sow, C.H., and Wee, A.T.S., Gold and Silver Coated Carbon Nanotubes: An Improved Broad-band Optical Limiter, *Chem. Phys. Lett.* **409**, 85-88 (2005).
- [24]. Darbara, D., Anilkumard, M.R., Rajagopalanb, V., Bhattacharyac, I., Elim, H.I., Ramakrishnappaf,T., Ezemag, F.I., Joseh, R., and Reddy, M.V., Studies on spinel cobaltites, MCo₂O₄ (M = Mn, Zn, Fe, Ni and Co) and their functional properties, *Ceramics International* **44**, 4630–4639 (2018).
- [25]. Elim, H.I., Jeon, S.-H., Verma, S., Ji, W., Tan, L.-S., Urbas, A., and Chiang, L.Y., Nonlinear Optical Transmission Properties of C₆₀ Dyads Consisting of a Light-Harvesting Diphenylaminofluorene Antenna, *J. Phys. Chem. B Letters* **112**, 9561-9564 (2008).
- [26]. Margolis, D.M., Garcia, J.V., Hazuda, D.J., and Haynes, B.F., Latency reversal and viral clearance to cure HIV-1, *Science* **353** (6297), p. 262, aaf6517-1 - aaf6517-7 (2016).
- [27]. Elim, H.I., Anandakathir, R., Jakubiak, R., Chiang, L.Y., Ji, W., and Tan, L.-S., Large concentration- dependent nonlinear optical responses of starburstiphenylamino-fluorenocarbonyl methano [60]fullerene pentads, *J. Mater. Chem.* **17**, 1826 (2007).
- [28]. Elim, H.I., Physics of Multitasking Nanomedicine, *IJHMCR* **2** (3), 509-519 (2017).
- [29]. Elim, H.I., Nanomedicine with Its Multitasking Applications: A View for Better Health, *IJHMCR* **2** (2), 353-357 (2017).
- [30]. Freitas, Jr., R.A., Current Status of Nanomedicine and Medical Nanorobotics, *Journal of Computational and Theoretical Nanoscience* Vol. **2**, 1–25 (2005).
- [31]. Yukl, S.A., Kaiser, P., Kim, P., Telwatte, S., Joshi, S.K., Vu, M., Lampiris, H., and Wong, J. K., HIV latency in isolated patient CD4+ T cells may be due to blocks in HIV transcriptional elongation, completion, and splicing, *Sci. Transl. Med.* **10**, eaap9927, pp. 1-16 (2018).
- [32]. Mapanawang, A.L., Sambode, F., Killing, M., Mapanawang, S., Dijnimangake, B., Maengkom, A., Pranata, P., Mapanawang, F., Maengkom, H., Averous, H., Musa, A., Murary, W., Mapanawang, G., Ismail, Sitanala, T., Syahputra, F., Lamidja, L., and Djafar, J., DENTIFICATION OF ANTIOXIDANT ACTIVITY OF GOLOBE HALMAHERA (HORNSTEDTIASP, INGIBERACEAE) FRUIT EXTRACT, *International Journal of Pharmacy Review & Research* **6** (1), 31-34 (2016).

Short Authors Biography:



Hendry Izaac Elim, Ph.D: Lecturer & Senior researcher (Ph.D.-Physics; personal website: <http://fisika.fmipa.unpatti.ac.id/hendry-izaac-elim>), now is an experience Indonesia scientist of nanoscience and nanotechnology (rank 23rd in 2017 based on Webometrics (<http://www.webometrics.info/en/node/96>), and the 39th best Indonesia scientist according to SINTA-RistekDikti in 2018), head of the Nanotechnology Research Center and Innovative Creation (PPNRI-LEMLIT, website: <http://lemlit.unpatti.ac.id/pusat-pnri>) of the Pattimura University (UNPATTI), Chairman for Nanomaterials for Photonics Nanotechnology Laboratory (N4PN Lab), Physics Department, Faculty of Mathematics and Natural Sciences (FMIPA-UNPATTI), Ambon, Indonesia, and regular Member of the Indonesia Theoretical Physicist. He got his B.Sc (S.Si). in Theoretical Physics in 1995 at Gadjah Mada university (UGM), the oldest university in Indonesia, M.Si (M.Sc). in Theoretical Physics of Institut Teknologi Bandung (ITB) in 1999, Specialist in nanoscience and nanotechnology, Physics Doctor's degree (Ph.D.) at National University of Singapore (NUS), Singapore on 13th December 2005, Docent at FMIPA-UNPATTI since 2000 up to present.

After his PhD at NUS, Dr. Elim worked as a postdoctoral fellow in physics department of NUS, and about 2 years later He moved to Tohoku university, Sendai, Japan working on superhybrid materials project at Institute of Multidisciplinary Research for Advanced Materials (IMRAM) from 2007 to 2012. In 2013, Dr. Elim worked as a scientist at Surya university, Indonesia for 3 months and then moved to STKIP Surya, Gading Serpong, Tangerang, Indonesia working as a physics lecturer for 1 year. Later in September 2014, Dr. Elim returned to FMIPA-UNPATTI and started building N4PN Lab as well as PPRI-LEMLIT until present time. The advancement of Science and technology development of Dr. Elim group started by educating the first 6 research B.Sc students and since that He already educated more than 30 graduated B.Sc in physics from all advanced research on novel superfibers fabricated from all types of garbage materials. The studies involved their mechanical and optical properties. Recently, Dr. Elim is leading research on water contaminated by CaCO₃, the aggregation of salt behaviors in ocean water and energy research development. Furthermore, Dr. Elim educated few research students to work on biomembrane films and fibers fabricated using rubbish natural things. These studies involved their mechanical and optical behaviors. In addition, Dr. Elim had been recently invited to give international scientific talks as well as many quest lecture talks in many national universities such as **UNPATTI, UNIMA, UNSRAT, STIKES Halmahera, AKBID MAKARIWO, and UI** of Indonesia closely related to the multitasking applications of nanoscience and nanotechnology in small islands and human characters. Based on the international community data recorded in Web of Science, Dr. Elim have published over 41 papers with h-index of 23, and citation more than 2000. In addition, **Dr. Elim is a member of top scientific society such as AAAS (ID No. 41737449) since 2017, and ACS (ID No. 31447106) in 2018.**

* **ORCID ID: 0000-0002-4272-7115**



Dr.dr. Arend L. Mapanawang, Finasim is the director of Health Medical College in Halmahera, North of Maluku, Indonesia as well as the Editor-in-Chief of International Journal of Health Medicine and Current Research (www.IJHMCR.com). Dr. Arend (usual nick name) is an expert in herbal medicine including for the curing of malaria, HIV virus, and hepatitis, as well as a practical doctor for healing many other internal body parts of human being deceases with more than 20 years experiences. He had written various books including history and the cause of world wars books. His publications in various international journals have made him as a prominent invited speaker in the world such as in South Korea, United Kingdom, and USA. Curently, Dr. Arend is the best scientist in the whole North Maluku province of Eastern Indonesia. On 27th February 2018, Dr. Elim and Dr Arend gave a quest lecture in the best and oldest university of Indonesia in Jakarta: **a new history in Indonesia that scientists from a small university provided their best knowledge to a huge prominent university scientists and students.**