



Proceeding ICoHPS 2021

International Conference on Health Polytechnic Ministry of Health Surabaya

Poltekkes Kemenkes Surabaya

Health Polytechnic of the Ministry of Health Surabaya - Indonesia

Surabaya, 6 - 7 October 2021



ISBN 978-623-97447-4-8



9 786239 744748

PROCEEDING

International Conference on Health Polytechnic Ministry of Health Surabaya Surabaya, 6-7 October 2021

Editor:

ICoNPH

Manager

Yohanes Kambaru Windy, SPd M.Kes MPH

Editor in Chief :

Dr. Padoli, SKp, M.Kes

Editor :

Dr. Supriyanto, SKp, M.Kes

Dr. Dhiana Setyorini, M.Kep.Sp.Mat

Minarti, M.Kep.Sp.Kom

Adin Mu'afiro, SST, M.Kes

Hepta Nur Anugraheni, S.Kep.Ns, M.Kep

Kusmini Suprihatin, SKp, M.Kep.Sp.A

Ach. Arfan Adinata, S,Kep,Ns., M.Kep

ICoMid

Manager:

Dr. Heru SWN, S.Kep., MM. Kes

Editor:

Evi Pratami, SST., M. Keb

Kharisma Kusumaningtyas, SSiT., M. Keb

Titi Maharrani, SST., M. Keb

Suryaningsih, SSiT., M. Keb

ICoMLT

Manager:

Ayu Puspitasari, ST, M.Si

Editor:

Anita Dwi Anggraeni, SST, M.Si

Ratno Tri UTomo, SST

Lully Hanni Endarini, S.Farm, MFarm, Apt.

Era Fitria Yunita, STr.Kes

Marlinda R, A.Md

Tacik Idayanti, SST, S.Si

Riya Agustin, SST, S.Si

ICoEH

Manager:

Dr.Budi Yulianto,M.Kes

Editor:

Dr.Ir.Iva Rustanti Eri W. MT.

Dr.Sri Poerwati,ST,M.Si

ICoN

Manager:

Inne Soesanti, S. Sos., S. Si., M. Kes.

Editor:

Ani Intiyati, SKM., M. Kes.

ICoDOH

Manager:

Isnanto, S.Si.T.,M.Kes.

Editor:

Dr. Imam Sarwo Edi, S.Si.T.,M.Pd.

Mokhamad Ainu Roziq, S.ST

Sanda Astrinata, S.T.

Proceeding International Conference on Health Polytechnic Ministry of Health Surabaya

ISBN: 978-623-97447-4-8

Copyright © 2021

The Proceeding of International Concerence aim to disseminate ideas for information and discussion. Comments or arguments for improvement of their presentation are welcome. The Views expressed in the papers are thoseof the authors. Article can be used, modified, and redistributed freely for non-commercial purposes (non-profit), provided this does not remove or change the attributes of the writer, not allowed to rewrite unless obtain prior permission from the author.

Reviewer

ICoNPH

Dr. Anita Joeliantina, S.Kep.,Ns., M.Kes.
Dr. Jujuk Proboningsih, SKp., M.KES.
Dr. Moch. Bahruddin, M.Kep.,Sp. KMB
Nikmatul Fadila, M.Kep.
Hasyim Asyari, S.Kep.,NS., M.Ked.
Diyah Wijayanti, M.Kep.
Inge Dhamanti, SKM., MPH., Ph.D
Dr.Dwi Ananto Wibrata, A.Per.Pend, SST, M.Kes

ICoMid

Teta Puji Rahayu, SST., M. Keb
Dwi Wahyu Wulan S, SST., M. Keb
Queen Khoirun Nisa Mairo, SST., M. Keb
Dwi Purwanti S.Kp., M. Kes
Deasy Irawati, SST., M. Keb
Esyuananik, SST., M. Keb
Uswatun Khasanah, SST., M. Keb
Ayesha Hendriana Ngestiningrum, SST., M. Keb
Evi Yunita Nugrahini, SST., M. Keb
Astuti Setiyani, SST., M. Kes

ICoMLT

Dr. Anik Handayani, M.Kes
Evy Diah Woelansari, S.Si.,M.Kes
Ayu Puspitasari, ST.,M.Si
Christ Kartika Rahayuningsih, ST., M.Si

ICoEH

Dr.Aris Santjaka, SKM.,M.Kes
Dr.Rico Januar Siitorus ,SKM.,M.Kes
Irwan Sulistio,SKM.M,Kes
Aries Prasetyo,SKM.MPH
Narwati,SSi.,M.Kes
Pratiwi Hermiyanti,SST.,M.KL
Marlik,S.Si., M.S
Suprijandani,SKM, MSc.PH
Demes Nurmayanti,ST,M.Kes

ICoN

Dr. Aripin Ahmad, S.Si.T, M.Kes
Agus Hendra Al Rahmad, SKM, MPH
Dr. Made Darawati, STP, M.Sc.
Dr. Ir. Juliana Christyaningsih, M.Kes
Taufiqurrahman, S.K.M., M.P.H
Annas Buanasita, SKM., M. Gizi

ICoDOH

Dr.Bejo Santoso.S.Si.T.,M.Kes
Zaeni Dahlan,S.Si.T.,M.Ph

Published by Health Polytechnic Ministry of Health Surabaya Indonesia

Jl. Pucang Jajar Tengah No. 56 Surabaya 60282, Indonesia

Phone : +62-31-5027058

www.poltekkesdepkes-sby.ac.id

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the copyright holder for which application should be addressed in the first instance to the publisher.



Welcome Message from the ICoHPS General Chair

In the name of Allah, the Most Beneficent and the Most Merciful. May peace, mercy, and blessings of Allah be upon you.

On behalf of the technical program committee, we warmly welcome you to 2021 **4th International Conference of Health Polytechnic Surabaya (ICoHPS)** in Surabaya, Indonesia with the theme " Empowering the Health Professionals and Community in Mitigating the Impacts of Covid-19 Pandemic".

The committee has organized exciting technical programs for The 2nd International Conference on Electronics, Biomedical Engineering, and Health Informatics (ICEBEHI), The 1st International Conference on Nursing and Public Health (ICoNPH), The 1st International Conference on Midwifery (ICoMid), The 1st International Conference on Medical Laboratory Technology (ICoMLT), The 1st International Conference on Environmental Health (ICoEH), The 1st International Conference on Nutrition (ICoN), The 1st International Conference on Dental and Oral Health (ICoDOH), is the annual international conference organized by Poltekkes Kemenkes Surabaya, Indonesia and co-organized by Muhammadiyah University of Surabaya, Health Academy Rustida Banyuwangi. Stikes Mitra Adiguna Palembang, Poltekkes Kemenkes Sorong, Poltekkes Kemenkes Ternate, Poltekkes Kemenkes Manado, Poltekkes Kemenkes Semarang, Poltekkes Kemenkes Banjarmasin, Poltekkes Kemenkes Medan, Poltekkes Kemenkes Aceh, Poltekkes Kemenkes Kaltim, Poltekkes Kemenkes Denpasar, Poltekkes Kemenkes Tasikmalaya, Poltekkes Kemenkes Palangkaraya, Poltekkes Kemenkes Palembang, and Isabela State University Philippines As an annual international conference, 4th ICoHP provides excellent platform to share innovative idea and experiences, exchange information, and explore collaboration among researchers, engineers, practitioners and scholars in the field of health science, and medical engineering.

The Purpose of the conference are:

Knowledge, practice and experience sharing among experts to mitigate the impacts of Covid-19 Pandemic.

Achieve workable and applicable approaches to dealing with Covid-19 Pandemic

Improving public awareness about Covid-19 resilience Pandemic

Develop networking among experts and audiences from different disciplines to anticipate the new wave of Covid-19 Pandemic

Create collaboration among scholars to conduct research on the topic of Covid-19

The forms of activities are:

International Conference which will be attended by four keynote speakers from 4 countries namely Australia, Philippines, Thailand, Malaysia

International standard call for papers with International proceeding outputs, International journal and DIKTI Accredited journal.

All submitted paper sthrough out went through arigorous review process and each paper was evaluated. Besides those regular sessions, 4th ICoHPS 2021 also features world-class keynote/plenary speeches and distinguish-invited speakers that reflect the current research and development trends in the aforementioned fields. We are deeply indebted to all seven technical program committe members as well as our reviewers, who volunteered a considerable amount of their time and expert set ensure affair, rigorous, and timely review process. Many thanks should be given to our keynote and invited speakers who will share their experience in this conference. Last but not least, our since regratitude should begiven to all authors for submitting their work to 4th ICoHPS 2021, which has allowed us to assemble a high q u a l i t y technical program.

Welcome to 4th ICoHPS 2021 and hope you will enjoy this virtual conference.

With best regards,
Dr. Siti Nur Kholifah
General Chair



Welcome To Health Polytechnic of the Ministry of Health, Surabaya



drg. Bambang Hadi Sugito, M.Kes
Director
Health Polytechnic of the Ministry of Health, Surabaya
Assalamu'alaikumWr. Wb.

Praise Allah SWT for bestowing His mercy and blessings, and with His permission we held the The 4th International Conference of Health Polytechnic Surabaya (ICoHPS) in 2021 which is part of a series to commemorate the LUSTRUM IV 2021, Ministry of Health Surabaya Polytechnic.

The Covid-19 pandemic situation requires partnerships of various parties and the preparedness of supporting human resources. Health professionals on the frontline need updating on knowledge, skills and awareness to fight against Covid-19.

From some of the explanations regarding the Covid 19, the PoltekkesKemenkes Surabaya will hold 4th International Conference of Health Polytechnic Surabaya (ICoHPS) with the theme "**Empowering the Health Professionals and Community in Mitigating the Impacts of Covid-19 Pandemic**". This Conference will bring all scholars, scientists, epidemiologists, medical doctors, nurses, allied health professionals, and even politicians to share their expertise to attain a workable approach to dealing with the Covid-19." on 6 – 7 October 2021, Implementation of Activities in a virtual conference.

The conference consists of seven conferences in accordance with scientific families, including: Electromedical Engineering, Nursing, Midwifery, Medical Laboratory Technology, Dental Nursing, Environmental Health. The name of the International Conference (IC) under the umbrella of 4th ICoHPS consist:

1. The 2nd International Conference on Electronics, Biomedical Engineering, and Health Informatics(ICEBEHI)
2. The 1st International Conference on Nursing and Public Health (ICoNPH)
3. The 1st International Conference on Midwifery (ICoMid)
4. The 1st International Conference on Medical Laboratory Technology (ICoMLT)
5. The 1st International Conference on Environmental Health (ICoEH)
6. The 1st International Conference on Nutrition (ICoN)
7. The 1st International Conference on Dental and Oral Health (ICoDOH)

Finally, I would like to congratulate and say thanks to the Co Host consisting of 12 Poltekkes in Indonesia, Muhammadiyah University of Surabaya, Health Academy Rustida Banyuwangi. Stikes Mitra Adiguna Palembang..and all participant from other institution participating in the 4th International Conference of Health Polytechnic Surabaya (ICoHPS).

May God the Almighty facilitate our work. That is the delivery of my welcome.
Thank you.

WassalamualaikumWr. Wb



CONTENT

Welcome Message from the ICoHPS General Chair
Welcome to Health Polytechnic of the Ministry of Health, Surabaya Indonesia

ICoNPH

Relationship of Family Support With Quality of Life Among Breast Cancer Patients in Surabaya <i>Qamariyah Ulfah, Yuanita Wulandari, Supatmi</i>	1-6
Empowering Mother on Prevention and Intervention of Stunting on Magetan Regency <i>Nurlailis Saadah, Hilmi Yumni, Budi Yulianto</i>	7-15
Interventions To Reducing Stigma Toward Covid-19: Rapid Review And Practical Recommendation <i>Yusron Amin, Haswita</i>	16-22
Literature Review The Effect Of Progressive Muscle Relaxation On Random Blood Sugar Levels In Diabetes Mellitus Type 2 <i>Novanda Virdiyana Prameswary, Minarti, Lembunai Tat Alberta, Supriyanto</i>	23-28
The Effect of Negative Pressure Wound Therapy (NPWT) on Diabetic Ulcer Wound Healing (Literature Review) <i>Eka Sulistiana, Lembunai Tat Alberta, Adivtian Ragayasa, Dwi Adji Norontoko</i>	29-39
The Application Of Ergonomic Exercises In Elderly With Sleep Disorders (Insomnia) At Harapan Kita Nursing Home Palembang In 2021 <i>Zakinah Arlina, Italia</i>	40-45
Medication Adherence With Blood Pressure Of Hypertension Clients At Baureno Public Health Center <i>Presdiana Pratiwi, Padoli, Anita Joeliantina</i>	46-51
Nutritional Status with the Incidence of Acute Respiratory Infection in Toddlers at Kalirungkut Public Health Center Surabaya <i>Rapi Dhira Dentasari, Emung Mardiyana Hidayat, Indriatie, Dhiana Setyorini</i>	52-56
The Effectiveness Of Excellent Service In The Elderly As An Effort To Improve Service <i>Leni Wijaya, Bela Purnama Dewi</i>	57-62
The Impact of Therapy Foot Exercise And Foot SPA on Foot Sensitivity in Patiens with Diabetes Mellitus: A Literature Review <i>Firda Fauziyah, Aida Novitasari, Endang Soelistyowati, Hepta Nur Anugrahini</i>	63-69
The Effect Of Basic Life Support Health Education In First Aid Accident In Public Senior High School 3 Sidoarjo <i>Zenitha Firdaus Nirmalasari, Dwi Ananto Wibrata, Minarti, Kiaonarni Ongko W</i>	70-76
Bullying Behavior Among Primary School Students <i>Erna Dwi Nur'aini, Siti Nur Kholifah, Dinarwiyata, Baiq Dewi Harnani</i>	77-81
Case Study of Verbal Abuse Against Adolescence <i>Yuri Aulia Berliana F., Siti Nur Kholifah, Nikmatul Fadilah, Asnani</i>	82-84
Family Social Support To The Girls Experiencing Anxiety During Menarche at Dusun Jombangan <i>Lisnur Devanda Putri, Baiq Dewi H, Hasyim As'ari, Yohane K. Windi</i>	85-88
Family Support To Elders With Gout Arthritis On Obeying Low Purine Diet <i>Nofinda Widya Sari, Dinar Wiyata, Intim Cahyono, Bambang Heriyanto</i>	89-93



The Effect Of Creambath Massage To Reduce Blood Pressure Of Dinda Salon Customers With Hypertension <i>Dinda Tri Agustina, Adin Mu'afiro, Adivtian Ragayasa, Dwi Ananto Wibrata</i>	94-99
Case Study Parents' Perceptions About Early Marriage In Wonokasian Village, Sidoarjo Regency <i>Hetty Nur Azizah, Baiq Dewi Harnani, Hasyim As'ari, Yohanes K. Windi</i>	100-103
Case Study Of Family Efforts Towards Hyperthermia Treatment In Children <i>Tyas Ayu Prasetyo, Hasyim As'ari, Minarti, Intim Cahyono</i>	104-106
Improving The Quality Of Life Of Plwha Through The Combined Peer And Family Supporting Model <i>Mahdalena, Mahpolah</i>	107-111
Case Study Parents' Efforts In Preventing Acute Respiratory Infection In Toddlers <i>Putri Mei Arifianti, Hayim As'ari, Intim Cahyono</i>	112-114
Family Support In Caring For People With Mental Disorders At The Menteng Health Center PalangkaRaya City <i>Maria Magdalena Purba, Irene Febriani</i>	115-119
Anxiety Heart Catheterization Of Coronary Heart Disease Patients <i>Rolly Rondonuwu, Esrom Kanine, Grace Kapugu, Dorce Sisfiani Sarimin</i>	120-128
Qualitative Analysis of Early Marriage and The Implications on Family Life in Bitung City <i>Ellen Pesak, Yourisna Pasambo, Jon Welliam Tangka, Nurseha Djaafar, Maria Terok, Semuel Tambuwun, DorceSisfiani Sarimin, Tinneke A. Tololiu, Maitha A. W. Keloay, Nita Riany Momongan, Bongakaraeng</i>	129-135
The Literature Review: The Effect of Pronation Position on Hemodynamic Change In Premature Baby With Respiratory Distress Syndrome <i>Siti Rochmatul Hidayah, Hotmaida Siagian, Kusmini Suprihatin, Dony S, Yetti Wilda</i>	136-144
The Correlation Between Nutritional Status With The Age of Menarche At Teenage Girls In Barendkrajan Village <i>Farra N.P., Siti Maimuna, Kusmini S, Afif Hilmi M</i>	145-149
Literature Review : Relationship Between Central Obesity And Hypertension <i>Athena J.T, Hotmaida S, Dony S, Kusmini</i>	150-157
Literature Review: Kangaroo Mother Care Treatment for Temperature Change In Low Birth Weight Babies <i>Khoiru Nikmah, Kusmini Suprihatin, Suprianto, Hotmaida Siagian</i>	158-164
Literature Review: Self Care Management on Blood Sugar Level Control In Diabetes Mellitus Type 2 Clients <i>Farin Fauziah, Siti Maimuna, Luluk Widarti, Tanty Wulandari</i>	165-170
Literature Review: The Effect of Baby Massage on Baby's Weight Gain <i>Nuur Annisa Setiawan, Kusmini Suprihatin, Alfi Maziyah, Tanty W, Yetti W</i>	171-176
Literature Review: The Effectiveness Of Self Management In Patients With Heart Failure <i>Yholanda R.H, Dony S, Hotmaida S, Suprianto, Kusmini</i>	177-182
Self-Efficacy In Self-Care Of Type 2 Diabetes Mellitus Clients At Kemangi Village Bungah District Gresik Regency	183-185



Case Study Of Peer Support To Obese Students At Diploma 3 Sutopo Nursing Program <i>Harlini Permata Sari, Dyah Wijayanti, Siti Nur Kholifah, Hasyim As'ari</i>	186-189
Effectiveness Of Prolanis On Reducing And Stability Of Blood Glucose Levels Of Patients Type 2 Diabetes Mellitus In Community Health Center Care Siko Ternate City <i>Al Azhar Muhammad</i>	198-204
Warm Compress On The Intensity Of Pain In Elderly With Arthritis Pain : A Literature Review <i>Yora Nopriani, R.A. Fadila</i>	205-212
Preparedness of Parents in Preventing Stunting at Jatirejo Village The District of Nganjuk <i>Riyola Wahyunisa, Bambang Heriyanto, Hilmi Yumni, Hermin Tumini</i>	213-218
The Relationship Of Knowledge About Covid-19 With The Health Maintenance Of Diabetes Mellitus Patients <i>Siti Badriah, Dini Mariani, Betty Suprapti</i>	219-224

ICoMid

Therapeutic Communication Midwife Practice Independently On Maternal Stage I In Covid-19 Era <i>Rohani,Veradilla</i>	1-6
The Correlation Between Exclusive Breastfeeding And Weight Loss In Lactating Women In The Independent Practice Midwife Yusida In 2020 <i>Reni Saswita, Vera Yuanita, Peti Tunjung Sari</i>	7-10
The Influence Of Counseling On The Level Of Knowledge And Attitude Of Mothers About Child Development In The Talang Jambe Village Palembang <i>Dona Tri Sundari, Nurbaity</i>	11-15
Relationship of Dietary Abstinence and Healing Time for Sectio Caesarea Wounds (A Systematic Review Approach) <i>Yuli Suryanti, Sri Emilda</i>	16-20
Loving Breastfeeding for Mother on Purperium Periode (An android-based educational media application) <i>Meti Widiya Lestari, Elvira Naftiani, Dita Eka Mardiani, Lia Nurcahyani</i>	21-26
The Factors Related To Stunting In Toddlers Aged 24-59 Months In Berasang Village, Kisam Tinggi District, Oku Selatan In 2020 <i>Faulia Mauluddina ,Untari Anggeni, Uun Sintia</i>	27-35
Analysis Of Infant Factors Affecting The Event Of Hypothermia In Newborn Babies (Literature Review) <i>Fanni Noor Arafanti, Dina Isfentiani, Ani Media Harumi</i>	36-41
Relationship between Antenatal Depression and Pre-Eclampsia (LITERATURE REVIEW) <i>Bilqis Nur Mustofa, Dwi Wahyu Wulan Sulisetyowati, Ani Media Harumi</i>	42-49
The analysis of the causes of PCOS (Polycystic Ovary Syndrome) <i>Faradila Elmi Sofiana, Yuni Ginarsih, Titi Maharrani</i>	50-57
Association Between Socio Economic And Environmental Sanitation With Stunting In Toddlers In The Work Area Of Dombusoi Health Center <i>Henrietta Imelda Tondong, Hastuti Usman, Luh Ayu Diyanasari</i>	58-62



Factors Of History Of Curettage, Age And History Of C-Section In The Incidence Of Placenta Previa (Literature Review) <i>Ajeng Aryanningsih, Tatarini Ika Pipit Cahyani, Kharisma Kusumaningtyas, Dwi Wahyu Wulan Sulisetyowati</i>	63-72
Back Massage Using Frangipani Aromatherapy Oil To Reduce The Level Of Tumor Necrosis Factor Alpha And The Intensity Of Labor Pain <i>Ni Nyoman Budiani, Ni Gusti Kompiang Sriasih, Gusti Ayu Marhaeni, Gusti Ayu Putri Kumala</i>	73-80
Green Betel Leaf Decoction For Discharge Complaints Of Teenage Girls In Hidayatullah Islamic Boarding School Ternate City <i>Nurdiana Lante, Istiana Asrari Bansu, Rusdiyah</i>	81-86
A Sociodemographic outlook for commissioning exclusive breastfeeding during Covid-19 pandemic in Palangkaraya, Central Kalimantan <i>Oktaviani</i>	87-91
The Use of Belly Bengkung on Uterine Fundal Height In Postpartum Mother <i>Melyana Nurul Widyawati, Febtiari Pedra Buana, Ngadiyono, Kusmini Suprihatin, Lutfiana Kusumawati</i>	92-96
ICoMLT	
Cadmium (Cd) Levels With Kidney Function Examination As An Indication Of Kidney Damage In Petrol Station Operators In North Surabaya with Atomic Absorption Spectrofotometry <i>Oryza Amilussolihati, Indah Lestari, Christ Kartika</i>	1-6
Cadmium (Cd) Levels In The Blood Of Communities Consuming Mystus Gulilo Around The Kenjeran Beach Area Of Surabaya With Atomic Absorption Spectrophotometry Method <i>Vernanda Arysa Nabilla, Indah Lestari, Christ Kartika Rahayuningsih, Ayu Puspitasari</i>	7-12
Difference of Body Posture for Venous Blood Collection on Hemoglobin Levels <i>Muhammad Ihsan Tarmizi, Nurhayati, Saprianto</i>	13-16
The Effect Of Drinking Calcareous Water On The Image Of Renal Function And Calcium In Kesan Eastern Mountain Residents, Ketapang Madura <i>Rahma Widyastuti, Ellies Tunjung S.M, Nur Vita Purwaningsih</i>	17-21
Identification of Intestinal Nematodes and Cestodes in Cows (Boss Sp.) With The Saturated NaCl Method in Tegalbanteng Village of Lumajang Regency <i>Mufti Qoulun Syadida, Anindita Riesti Retno Arimurti, Suyatno Hadi Saputro, Fitrotin Azizah</i>	22-25
Differences of Erythrocyte Index in Patients With Diabetes Mellitus Given The Criteria for Prediabetes And Diabetes at Kedungdoro Public Health Center Surabaya <i>Adhistantia Krisandy Putri, Suhariyadi, Evy Diah Woelansari, Anita Dwi Anggraini</i>	26-33
Accuracy And Precision Of Uric Acid Examination Point Of Care Testing Method And Uricase Enzymatic Colorimetric Method <i>Fitria Yulfirda Arini, Anik Handayati, Ayu Puspitasari</i>	34-38
Overview of Covid-19 Case in Lumajang Regency on 2020 <i>Titik Erliyah</i>	39-48
Antimicrobial Potential Of Kepok Banana Sheaths Extract (Musa paradisiaca formatypica) On The Growth Of Staphylococcus aureus Bacteria <i>I Nyoman Jirna, Gusti Ayu Made Ratih</i>	49-54
Incidence Of Worm Infection In Primary School Children In The New Normal Implementation Of Pandemi Covid-19 In The Coastal Area Of North Sulawesi <i>Indra Elisabet Lalangpuling, Michael V.L Tumbol, Muh. Ali Makaminan</i>	55-60



Diagnostic Test Of Frozen Section Histopathological Preparations Against Gold Standard Histopathology Of Paraffin Block In Breast Tumor <i>Anggraeni Windi Rosari, Anik Handayati, Wisnu Istanto</i>	61-65
Carboxyhemoglobin (CoHb) Levels In Active And Passive Smokers In Bangkalan Regency <i>Devyana Dyah Wulandari, Medy Rozaliyati, Farach Khanifah, Aprilia Dewi Saputri, Izzatun Nailah, Nor Halimah</i>	66-72
Representation of NLR (neutrophil lymphocyte count ratio) values in coronavirus patients (Covid-19) by age group at Gatoel Mojokerto Hospital <i>Juliawan Apurwatama, Anik Handayati, Rinza Rahmawati</i>	73-77
A Mini Review Of Natural Antioxidant For Alzheimer's Disease <i>Emma Kamelia, Marni Br Karo, Tetty Rina A, Sri Rahayu, Titus Tambaip, Hadiyat Miko</i>	78-84

ICoEH

Overview Of Behavior And Control Of Dengue Fever In The Work Area Of The Sabokingking Palembang Health Center Year 2020 <i>Farhani Sucitami, GhinaAjeng Felicia, Emmy, Priyadi, Maksuk</i>	1-11
The Potential of Fermented Oyster Mushroom Filtrate (<i>Pleurotus ostreatus</i>) as Host-Seeking Attractant of <i>Aedes aegypti</i> Mosquito <i>Feby Carira Sindy, Pratiwi Hermiyanti, Fitri Rokhmalia, Demes Nurmayanti</i>	12-20
Management of Hazardous and Toxic (B3) Covid-19 Infectious Waste in Nganjuk Hospital 2021 <i>Ahlun Najaa Nazzun Priyono Putro, Fitri Rokhmalia, Darjati</i>	21-25
The Effect Of Dust Levels In The Furniture Industry On Resident's Subjective Complaints (Case Study In Tanjungan Village, Driyorejo District, Gresik Regency) <i>Yanandra Alifia Priandani, Rachmaniyah, Setiawan</i>	26-31
The Effect Of Distance Of Benowo Waste Final Disposal (Tpa) Surabaya City On H ₂ s And Nh ₃ Levels In The Settlement Environment <i>Imilda Lidiawati, Khambali, Darjati</i>	32-36
Relationship Of Hygiene And Sanitation With Microbiological Quality Of Drinking Water Depo Water During The Covid-19 Pandemic In 2021 (In Dupak Village, Krembangan District, Surabaya City) <i>M. Lazzuardhi Ilmi, Khambali, Demes Nurmayanti</i>	37-42
Influence Of SO ₂ and NH ₃ Gas Levels On Public Health Around Benowo Final Disposal Site, Surabaya City <i>Rifka Anggraeni, Dr. Khambali, Narwati</i>	43-49
The Effect Of Noise Due To Aircraft Passing In Settlements Around Juanda Airport On Community Subjective Complaints (Case Study in Sedati Gede Village, Sidoarjo in 2021) <i>Arina Khusnal Hidayaty, Dr. Khambali, Irwan, Rachmaniyah, Demes Nurmayanti</i>	50-54
The Effect Of Working Period, Nutritional Status, And Smoking Habits On Work Fatigue at PT. Atlantic Anugrah Metalindo Surabaya Year 2021 <i>Presillia Aulina, Dr. Khambali, Suprijandani, Winarko, Rusmiati</i>	55-60
Society Role in Drinking Water Treatment with <i>Ipomoea carnea</i> <i>Sri Poerwati, Aries Prasetyo, Waella Septamari Budi</i>	61-66
<i>Ipomoea carnea</i> Leaf Extract As Antibacterial Drinking Water Deep Wells <i>Sri Poerwati, Aries Prasetyo2 Waella Septamari Budi</i>	67-70



The Examination of The Quality of Chitosan from Bamboo Shell Waste with Variations of NaOH Concentration in the Deacetylation Process 71-78
Sayyidah Nafysah Ahmad, Darjati, Hadi Suryono

ICoN

The Association Between Peers Influence and Sweets Consumption Pattern in Adolescent Girls 1-6
Nisri Ina Zahrah, Moh Fanani, Tonang Dwi Ardyanto

Effect of Dates (*Phoenix dactylifera* Linn.) on Low-Density Lipoprotein (LDL) in Type 2 Diabetes Mellitus Patients 7-11
Erlyna Jayeng, Eti Poncorini, Eny Sayuningsih, Sari Luthfiyah

The Effect Of Training Using The Stunting Module On The Knowledge And Skills Of Cadres About Prevention And Handling Of Stunting At Tanoyan Health Center, Lolayan Regency, Bolaang Mongondow Regency 12-18
Meildy E. Pascoal, Irza N. Ranti, Vera T. Harikedua, Kevin G. Pascoal

The Variation " Tofu Waste Nugget With Subtitution Of Basil Leaves Extract " On Organoleptic Test And Bacterial Pollution 19-27
Firdaus Sukma, Juliana Christyaningsih, Melina Sari, Nurul Hindaryani

Administration of Pismatom Juice in Increasing the Energy Efficiency In Middle-Distance Run Athletes of PASI Denpasar, Bali-Indonesia 28-32
I Wayan Juniarsana, IGA Ayu Dharmawati

Acceptability And Nutritional Content Of Supplematary Food For Pregnant Woman With Chronic Energy Deficiency In Sambikereb Sub-District Surabaya 33-49
Ani Intiyati, Dian Shofiya, Berliana Putri Nurlaili, Devi Imroatul Latifah

Effect of additional tuna fish flour (*Euthynnus affinis*) to organoleptic test of taro cookies (*Colocasia l. Schoott*) for pregnant women 50-59
Kurniati Dwi Utami, Rieska Indah Mulyani

The Effect Of Giving Explanation With Card Media Make A Match Method To The Increase Of Anemia Prevention Behavior At 4TH Grade Students Of Elementary School In Tanjung Morawa Sub District 60-64
Mahdiah, Erlina Nasution, Ida Nurhayati

Organoleptic Properties and Nutrient Cookies from Flour of Taro Kimpul, Salak Manonjaya, and Tolo Beans As An Emergency Food 65-76
Fini Fitria Febriani, Sumarto

Effectivity Of Complementary Feeding Guidelines On Mother's Knowledge Babies In Argasunya Village, Cirebon City 77-85
Uun Kunaepah, Alina Hizni, Anis Abdul Muis, Priyo Sulistiyono

Moringa Leaf Bubble Drink Increases Hemoglobin Levels In Adolescent Girls 86-91
Rudolf Boyke Purba, Ni Made Dewi Ardiani, Fred Rumagit dan Joice M. Laoh

The Test Of Acceptance And Nutritional Contents Of Telle Fishball Formulation As An Alternative Snack For Pre-school Age Children With Picky Eater Risks Of PEM And VAD 92-102
Sephia Tri Cahyaning Hari, Taufiqurrahman, Nuning Marina Pengge

Acceptance Test And Antioxidant Levels Cat Tongue Cookies "Red Rosella Flower Flour" As An Alternative Snack For Hypertension Patients 103-108
Dea Larasati, Juliana Christyaningsih, Melina Sari, Nurul Hindaryani

Food Behavior chosen among communities in preventing of COVID-19 infection in East Java 109-115
A Buanasita, L Sholihah, Y. Prabawani, I Soesanti



Nutrition Knowledge and Frequency of Food Consumption During COVID-19 Outbreak 116-124
Meirina Dwi Larasati, Elvira Dona Lukmana

ICoDOH

The Influence of Information Technology-Based Toddler Dental Health Care Model (AGITA) on Mothers towards Teeth Brushing Skills of Children 1-6
Wiangke Fajrin, Tri Wiyatini, Diah Fatmasari

The Effect Of Gargling Coconut Essential Oil (*Cocos Nucifera* L) With Oil Pulling Method Against Tooth Calculus Index And Papila Bleeding Index In Woman With Gingivitis Disease 7-14
Rosdiana Tiurlan Simaremare, Manta Rosma, Kirana Patrolina Sihombing

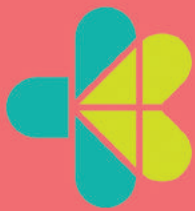
Solubility of Calcium in Artificial Saliva Made from Golden Snail Shells for Tooth Remineralization 15-18
Marlindayanti, Ismalayani, Podojoyo

Determinants Of Dental And Oral Disease In Pregnant Woman From A Sociodemographic Aspect 19-24
Aulia Nur Ihza Josi Putri, Silvia Prasetyowati, Soesilaningtyas, Isnanto



ICoMLT

International Conference on Medical Laboratory Technology



A MINI REVIEW OF NATURAL ANTIOXIDANT FOR ALZHEIMER'S DISEASE

Emma Kamelia¹, Marni Br Karo², Tetty Rina A³, Sri Rahayu⁴, Titus Tambaip⁵, Hadiyat Miko⁶

¹Department of Oral Health Therapy, Tasikmalaya Health Polytechnic, West Java, Indonesia 46115; Health And Disaster Emergency [HADE] Centre, Center Of Excellent Poltekkes Kemenkes Tasikmalaya, Indonesia; kamelia.emma@gmail.com (Corresponding author)

²Department of Midwifery, Medistra Health Higher school, Bekasi, West Java, Indonesia 17113; marnikaro.stikesmi@gmail.com

³Department of Midwifery, Medistra Health Higher school, Bekasi, West Java, Indonesia 17113; tetty.rina.2109@gmail.com

⁴Faculty of Health Science, Singaperbangsa State University, Karawang, West Java, Indonesia; rahayoes3kedokteran@gmail.com

⁵Midwifery Program of Yaleka-Maros School, Merauke-Papua, Indonesia; titus_tambaip@gmail.com

⁶ Department of Oral Health Therapy, Tasikmalaya Health Polytechnic, West Java, Indonesia 46115; Health And Disaster Emergency [HADE] Centre, Center Of Excellent Poltekkes Kemenkes Tasikmalaya, Indonesia; drgmiko9@gmail.com

ABSTRACT

Alzheimer's disease (AD) is the leading cause of dementia, an estimated 5 million people in the US suffer at a cost of more than \$70 billion per year. The main theories on the causes of AD include amyloid-beta ($A\beta$), tauopathy, inflammation and oxidative stress. The purpose of writing this review article is to look at the various types of natural antioxidants and the mechanism of action of each against AD therapy. **Method:** this article reviews antioxidants to activity of action against AD. The following databases were searched from their inception: Google scholar, Science direct, PubMed. The document relevant analyzed and included in the review. Therefore, this paper mainly focuses on the recent developments of common used antioxidant therapies for AD. **Results:** Alzheimer's disease correlates with free radicals which can be minimized by consuming natural antioxidants from foods such as vitamins C and E, carotenoids (β -carotene and astaxanthin), Flavonoids, Green tea, Huperzine, Ginkgo biloba, Centella asiatica, Curcumin, Melissa officinalis, Polygala tenuifolia, Salvia miltiorrhiza bung and Withaniasomnifera (L), with a variety of different mechanisms of action for each of these types of natural antioxidants. **Conclusion:** The therapeutic potential of AD in natural antioxidants plays an important role in prevention and treatment

Key Words: Natural antioxidant, Alzheimers disease, Mechanism of action, Prevention and Treatment

INTRODUCTION

Alzheimer's disease is a degenerative brain disease and the most common cause of dementia¹. The number of the disease is projected to reach 106.8 million worldwide by the year 2050, therefore, the disease is a growing public health concern with major socioeconomic burden². The risk of AD varies from 12% to 19% for women over the age of 65 years and 6% to 10% for men³ and rises exponentially with age, such that up to 47% of individuals over the age of 80 develop AD⁴. Dementia is a syndrome, a group of symptoms that has a number of causes. The characteristic symptoms of dementia are difficulties with memory, language, problem-solving and other cognitive skills that affect a person's ability to perform everyday activities. These difficulties occur because nerve cells (neurons) in parts of the brain involved in cognitive function have been damaged or destroyed.

METHODS

A comprehensive literature search was performed from the inception of the study on these online databases: Google scholar, Science direct and PubMed. The search terms that were used were "natural antioxidant", and "Alzheimer's Disease". The search was limited to English articles only.

RESULTS AND DISCUSSION

Alzheimer's disease is highly correlated with free radicals and cellular redox imbalance⁵. Have become the culprit for influencing human health. In order to scavenge superfluous free radicals and maintain the balance of homeostasis in human body as well as accomplish the prevention and treatment of diseases, the consumption of antioxidants is necessary. However, synthetic antioxidants have toxic effects to some extents. Therefore, the uptake of natural antioxidants from foods is the first choice because natural antioxidants not only play an important role in the prevention and adjunctive treatment of diseases but also can avoid the adverse reactions to human health. In this article, common natural antioxidants such as vitamins (vitamin C and E), carotenoids (β -carotene and astaxanthin), flavonoids and some traditional herbal antioxidants also exhibit potential for AD therapy in foods are summarized. In the antioxidant Systems, Endogenous defense mechanisms, including enzymatic antioxidant systems and cellular molecules, protect against free radical-induced cellular damage. SOD, catalase, and glutathione peroxidase are three primary enzymes involved in direct elimination of active oxygen species (superoxide radical and H₂O₂). A number of dietary factors such as antioxidants, vitamins, polyphenols, and fish have been reported to decrease the risk of AD⁶. A summary of the natural antioxidant used to treat AD is presented in table 1, from this table are enumerated of describing natural antioxidants, foods rich in natural antioxidants and references

Table 1. The natural antioxidants in prevention and treatment of Alzheimer's disease.

Natural antioxidants	Foods rich in natural antioxidants	Reference
Vitamin E (α -tocopherol)	Corn oil, Soybean oil, Margarine, and Dressings	7
vitamin C	Citrus fruits, Broccoli, Russels sprouts, Raw bell peppers, and Strawberries	8
β -carotene	Spinach, Kale, Cantaloupe, Mangoes, Pumpkin, Papayas, Carrots and Sweet potatoes	9
Astaxanthin	Shrimp shell, Oysters and Salmons	10
Green tea	Green tea	11
Flavonoids	Plants, Berries, Honey Chinese herbs	12
Huperzine A	Extract of Huperzia serrata	13
Gingko biloba	The Ginkgo tree extract EGb 761	14
Curcumin	Curcumin root	15
Centellaasiatica	Centellaasiatica leaf	16
Melissa officinalis (Labiatae)	Melissa officinalis leaf	17
Polygala tenuifolia (Polygalaceae)	Polygala tenuifolia (Polygalaceae) root	18
Salvia miltiorrhiza bung	Salvia miltiorrhiza bung root	19
Withaniasomnifera (L.) Dun	Withania somnifera (Solanaceae) root	20

In the aging model mice induced by *D*-galactose, astaxanthin treatment can recover the activities of GSH-Px and SOD, enhance GSH content and reduce oxidative stress, improve pathological injury of hippocampus, and increase the expression level of BDNF, thus achieving the anti-aging role finally¹⁰. Green tea polyphenols have obvious protective effect on neurodegenerative diseases such as Alzheimer's disease. In the pathogenesis of AD, amyloid beta (A β) aggregation can lead to the generation of a large amount of free radicals such as active oxygen species and active nitrogen species, correspondingly resulting in oxidative stress and accelerating neuronal death. (-)-Epigallocatechin-3-gallate (EGCG) as the effective component in green tea polyphenols was reported to significantly reduce the A β deposition in transgenic mice with the over-expression of A β and increase the activity of α -secretase, suggesting that green tea polyphenols have an important role in decreasing oxidative stress in the

brain of AD patients²¹. Another study on model mice with high-fat and high-sugar diet for 4 weeks and green tea polyphenol solution instead of drinking water revealed that green tea polyphenols can result in the significant reduction in the permeability of large artery and ROS levels as well as protein expression level of NAD(P)H oxidase subunit p22^{phox} and p67^{phox} in high-fat and high-sugar diet-induced model mice. As NAD(P)H oxidase is an important source of ROS *in vivo*, the antioxidant effect of green tea polyphenols *in vivo* may implement through inhibiting the expression of NAD(P)H oxidase²². The contents of derivatives from ROS metabolites in patients with hepatocellular carcinoma reveal a significant decrease when provided with green tea tablets during the chemotherapy treatment²³. In addition, the free radical analysis system 4 (FRAS4) has shown that the potential of biological antioxidant is greatly improved. Moreover, green tea polyphenols also have an important function in inhibiting tumor and inflammation^{24,25,26}. The flavonoids extracted from some plants have an excellent antioxidant function for the protection of vascular system and the treatment of arthritis and Alzheimer's disease. In arthritis model mice treated through oral administration of *Daphne genkwa* flavonoids extract at the dose of 50 mg/kg for 15 consecutive days, the arthritis score (ACS) was decreased while the expression of SOD and GSH-Px enzymes was increased when compared with the control group^{27,28}. A study on 32 elderly people treated with fresh *G. biloba* extract revealed the improved microcirculation of skin and liver, accelerated scavenging of free radicals and the improvement of arteriosclerosis. 30 days after 270 mg *G. biloba* extract or placebo treatment, the red cell perfusion nodes and blood flow of small veins, and red blood cell volume revealed an obvious higher in the *G. biloba* extract treatment group when compared with the control group. Moreover, a significantly higher level of GSH as a radical scavenger in the *G. biloba* extract treatment group than that of the control group was also observed. Therefore, *G. biloba* has a beneficial effect on the health of the elderly population²⁹. Flavonoids from *Panaxnotoginseng* have strong antioxidant activity³⁰. *Salvia miltiorrhiza* also contains a lot of bioactive components with antioxidant and anti-inflammatory functions. Guo et al reported that tanshinol plays a protective role in apoptosis induced by γ -ray through reducing the generation of ROS, inhibiting the release of cytochrome C and blocking the activation of apoptotic factors³¹. The pretreatment of tanshinol on L-02 cells can significantly reduce the level of ROS caused by γ -ray and the activity of Caspase 3 as well as the expression of Bax. Tanshinone IIA can weaken neuronal damage induced by hydrogen peroxide³². Flavonoids in *Glycyrrhiza* such as licorice chalcone and licorice isoflavone also have strong antioxidant activity, which plays an important role in the clearance of free radicals and prevention of diseases^{12,33}. Another prescription "Suhexiang pill" can reduce A β deposition in model mice with Alzheimer's disease, enhance memory and inhibit the apoptosis caused by A β and decrease oxidative stress in brain³⁴. A natural antioxidant mechanism of action of AD reviewed are presented in Table 2

Table 2. Natural antioxidant mechanism of action of AD

Natural antioxidant	Mechanism of action /target	Reference
Vitamin E (α -tocopherol)	Suppresses brain lipid peroxidation and significantly reduces A β levels and senile plaque deposition	35
Vitamin C	Decrease high levels of isoprostanes and oxidative stress <i>in vivo</i> , enhance NO bioavailability, restore the regulation of shear stress in arterioles, and normalize systemic blood pressure	36
β -carotene	Synergistically interact against lipid peroxidation	37
Astaxanthin	The involvement of extracellular signal-regulated kinases 1 and 2 (ERK1/2) signaling and the downstream activation of HO-1 on observed neuroprotection from the amyloid beta peptides. AXT ultimately reduced apoptotic-related mediators caspase 3 and Bax	38
Green tea	EGCG The principal bioactive component found in green tea, has anti-inflammatory properties by modulating different molecular pathways. Regarding AD's syndrome, EGCG mainly induces reduction in A β accumulation, by modulating several biological mechanisms.	39
Flavonoids	Their specific interactions within the ERK and PI3-kinase/Akt signaling pathways, at the level of receptors or kinases, have been shown to increase the expression of neuroprotective and neuromodulatory proteins and increase the number of, and strength of, connections between neurons.	40
Huperzine A	Reduce glutamate-induced toxicity in neurons, possibly through modulation of glutamate-NMDA receptor interaction, or of the passage of Ca ²⁺ through associated ion channels	13

THE 4th INTERNATIONAL CONFERENCE ON HEALTH POLYTECHNICS OF SURABAYA (ICOHPS)
1st International Conference on Medical Laboratory Technology (ICoMLT)

Gingko biloba	Block Abeta1-42-induced Ca ²⁺ dyshomeostasis mediated by formation of toxic mediators such as H ₂ O ₂ and PAF	41
Curcumin	Corrected Abeta-induced caspase-3 activation, Bcl-2 downregulation and Akt phosphorylation	42
Centella asiatica	Protect cortical neurons from glutamate-induced excitotoxicity in vitro	43
Melissa officinalis (Labiatae)	Inhibitor of AChE and binding to muscarinic and nicotinic receptors	44
Polygala tenuifolia (Polygalaceae)	Upregulated choline acetyltransferase (ChAT) activity and increased nerve growth factor (NGF) secretion	44
Salvia miltiorrhiza bung	Inhibit neuronal cell death by inhibition of presynaptic glutamate release, and nitric oxide (NO) formation.	19
Withaniasomnifera (L.) Dun	Reversed the reduction in cholinergic markers (e.g. ACh, ChAT). Enhances liver LRP (low density lipoprotein receptor- related protein) and decreases β-Amyloid formation by Aβ- degrading protease neprilysin (NEP) in brain	45

CONCLUSION

Antioxidants play an important role in counteracting free radicals and maintaining the balance of the body. In modern life, the application of synthetic drugs for health care and disease prevention does not seem the optimal choice. The contribution of natural antioxidants plays an important role in the prevention and treatment of AD, and can meet the demands of modern society. The process of extracting and preserving natural antioxidants is a development target for the food and health care industry in the future. The following natural antioxidants have different mechanisms of action such as vitamin E and carotenoids (β-carotene) which can suppress lipid peroxidation and reduce Aβ levels, Vitamin C reduces isoprostane levels and oxidative stress, Astaxanthin works to suppress the apoptotic mediators caspase 3 and Bax, Flavonoids as neuroprotective, neuromodulator and synaptogenesis, Green tea has the main bioactive component EGCG as an anti-inflammatory and induces a reduction in Aβ accumulation, Huperzine A modulates glutamate-NMDA receptor interactions, Ginko biloba works to block Abeta1 -42, Centella asiatica works to protect cortical neurons from glutamate-induced excitotoxicity, Curcumin activates corrected Abeta-induced caspase-3 and downregulates Bcl-2 and Akt phosphorylation, Melissa officinalis inhibits AChE and binds to muscarinic and nicotinic receptors, Polygala tenuifolia activates secretion nerve growth factor (NGF), Salvia miltiorrhiza bung works to inhibit neuronal cell apoptosis by inhibiting presynaptic glutamate release and nitric oxide (NO) formation, Withaniasomnifera (L) works to reduce Aβ formation by the neprilysin protease (NEP). Each of these natural antioxidants has a different mechanism of action in endogenous defense, including enzymatic antioxidant systems and cellular molecules, protecting against cellular damage caused by free radicals.

REFERENCES

1. Wilson RS, Segawa E, Boyle PA, Anagnos SE, Hizez LP, Bennett DA. The natural history of cognitive decline in Alzheimer's disease. *Psychol Aging*. 2012;27:1008–17
2. Brookmeyer R, Johnson E, Ziegler-Graham K, Arrighi HM. Forecasting the global burden of Alzheimer's disease. *Alzheimer's and Dementia*. 2007;3(3):186–191
3. Seshadri S, Wolf PA, Beiser A, Au R, McNulty K, White R, D'Agostino AB. Lifetime risk of dementia and Alzheimer's disease: The impact of mortality on risk estimates in the Framingham Study. *Neurology*. 1997;49:1498–504
4. Evans DA, Funkenstein HH, Albert MS, Scherr PA, Cook NR, Chown MJ, Hebert LE, Hennekens HC, Taylor JO. Prevalence of Alzheimer's disease in a community population of older persons. Higher than previously reported. *JAMA*. 1989;262:2551–6

5. Labat-Robert J, Robert L. Longevity and aging. Role of free radicals and xanthine oxidase. A review *Pathol. Biol. (Paris)*, 2014;62:61-66
6. Ramassamy C, Belkacémi A. Nutrition and alzheimer's disease: is there any connection? *Current Alzheimer Research*. 2011;8(5),443-4
7. Bieri JG., Everts RP. γ -Tocopherol: metabolism, biological activity and significance in human vitamin E nutrition. *American Journal of Clinical Nutrition*. 1974;27(9):980-986
8. Fact Sheet for Health Professionals - Vitamin C". Office of Dietary Supplements, US National Institutes of Health. February 11, 2016. Archived from the original on July 30, 2017
9. Kidmose U, Edelenbos M, Christensen LP, Hegelund E. Chromatographic determination of changes in pigments in spinach (*Spinaciaoleracea* L.) during processing. *J Chromatogr Sci*. 2005;43 (9):466-72
10. Wu W, Wang X, Xiang Q, et al. Astaxanthin alleviates brain aging in rats by attenuating oxidative stress and increasing BDNF levels. *Food Funct.*, 2014;5:158-66
11. Schmidt A, Hammann F, Wolnerhanssen B et al. Green tea extract enhances parieto-frontal connectivity during working memory processing. *Psychopharmacology (Berl)*.2014;231:3879-88
12. Jiang J, Zhang X, True AD et al. Inhibition of lipid oxidation and rancidity in precooked pork patties by radical-scavenging licorice (*Glycyrrhizaglabra*) extract. *J. Food Sci*. 2013;78:1686-94
13. Ved HS., Koenig ML, Dave JR, Doctor BP, Huperzine A. a potential therapeutic agent for dementia, reduces neuronal cell death caused by glutamate. *Neuroreport*. 1997;8(4):963-68
14. Topic B, Tani E, Tsiakitzis K, Kourounakis PN, Dere E, Hasenohrl RU, Hacker R, Mattern CM, Huston JP. Enhanced maze performance and reduced oxidative stress by combined extracts of zingiberofficinale and ginkgo biloba in the aged rat. *Neurobiol Aging*. 2002;23(1):135-143
15. Gupta SC, Kismali G, Aggarwal BB. Curcumin, a component of turmeric: from farm to pharmacy. *Biofactors*. 2013;39(1): 2-13
16. Manyam BV. Dementia in ayurveda. *J Altern Complement Med*. 1999;5(1): 81-8
17. Tildesley NT, Kennedy DO, Perry EK, Ballard CG, Savelev S, Wesnes KA, Scholey AB. *Salvia lavandulaefolia* (Spanish sage) enhances memory in healthy young volunteers. *Pharmacol Biochem Behav*. 2003;75(3):669-674
18. Cheng MC, Li CY, Ko HC, Ko FN, Lin YL, Wu TS. Antidepressant principles of the roots of *polygala tenuifolia*. *J Nat Prod*. 2006;69(9):1305-09
19. Kuang P, Wu W, Zhu K. Evidence for amelioration of cellular damage in ischemic rat brain by *radix salviaemiltiorrhizae* treatment-immunocytochemistry and histopathology studies. *J Tradit Chin*

THE 4th INTERNATIONAL CONFERENCE ON HEALTH POLYTECHNICS OF SURABAYA (ICOHPS)
1st International Conference on Medical Laboratory Technology (ICoMLT)

Med. 1993;13(1):38–41

20. Newhouse PA, Kelton M. Nicotinic systems in central nervous systems disease: degenerative disorders and beyond. *Pharm Acta Helv.* 2000;74(2–3):91–101
21. Rezai-Zadeh K, Shytle D, Sun N et al. Green tea epigallocatechin-3-gallate (EGCG) modulates amyloid precursor protein cleavage and reduces cerebral amyloidosis in Alzheimer transgenic mice. *J. Neurosci.* 2005;25:8807-14
22. Zuo X, Tian C, Zhao N et al. Tea polyphenols alleviate high fat and high glucose-induced endothelial hyperpermeability by attenuating ROS production via NADPH oxidase pathway. *BMC Res. Notes*, 2014;7:120
23. Baba Y, Sonoda JJ, Hayashi S et al. Reduction of oxidative stress in liver cancer patients by oral green tea polyphenol tablets during hepatic arterial infusion chemotherapy. *Exp. Ther. Med.* 2012;4:452-58
24. Riegsecker S, Wiczynski D, Kaplan MJ et al. Potential benefits of green tea polyphenol EGCG in the prevention and treatment of vascular inflammation in rheumatoid arthritis. *Life Sci.* 2013;93:307-12
25. Bornhoeft J, Castaneda D, Nemoseck T et al. The protective effects of green tea polyphenols: lipid profile, inflammation, and antioxidant capacity in rats fed an atherogenic diet and dextran sodium sulfate. *J. Med. Food*, 2012;15:726-32
26. Gu Q, Hu C, Chen Q, et al. Tea polyphenols prevent lung from preneoplastic lesions and effect p53 and bcl-2 gene expression in rat lung tissues. *Int. J. Clin. Exp. Pathol.* 2013;6:1523-31
27. Jiang J, Yuan X, Wang T et al. Antioxidative and cardioprotective effects of total flavonoids extracted from *Dracocephalum moldavica* L. against acute ischemia/reperfusion-induced myocardial injury in isolated rat heart. *Cardiovasc. Toxicol.* 2014;14:74-82
28. Askari G, Ghiasvand R, Feizi A et al. The effect of quercetin supplementation on selected markers of inflammation and oxidative stress. *J. Res. Med. Sci.* 2012;17:637-41
29. Suter A, Niemer W, Klopp R. A new ginkgo fresh plant extract increases microcirculation and radical scavenging activity in elderly patients. *Adv Ther.* 2011;28(12) :1078-88
30. Hong J, Hu JY, Liu JH et al. In vitro antioxidant and antimicrobial activities of flavonoids from *Panax notoginseng* flowers. *Nat. Prod. Res.* 2014;28:1260-66
31. Guo J, Zhang Y, Zeng L et al. S alvianic acid A protects L-02 cells against gamma-irradiation-induced apoptosis via the scavenging of reactive oxygen species. *Environ. Toxicol. Pharmacol.* 2013;35:117-30
32. Wang W, Zheng LL, Wang F et al. Tanshinone IIA attenuates neuronal damage and the impairment of long-term potentiation induced by hydrogen peroxide. *J. Ethnopharmacol.* 2011;134:147-55

33. Asl MN, Hosseinzadeh H. Review of pharmacological effects of Glycyrrhiza sp. and its bioactive compounds. *Phytother. Res.* 2008;22:709-24
34. Jeon S, Bose S, Hur J et al. A modified formulation of Chinese traditional medicine improves memory impairment and reduces Abeta level in the Tg-APP^{swe}/PS1^{dE9} mouse model of Alzheimer's disease. *J. Ethnopharmacol.* 2011;137:783-89
35. S. Sung, Y. Yao, K. Uryu et al. Early vitamin E supplementation in young but not aged mice reduces Abeta levels and amyloid deposition in a transgenic model of Alzheimer's disease. *The FASEB Journal*, 18(2), 323–325 (2004)
36. Z. Bagi, C. Csekó, E. Tóth, and A. Koller. Oxidative stress-induced dysregulation of arteriolar wall shear stress and blood pressure in hyperhomocysteinemia is prevented by chronic vitamin C treatment. *American Journal of Physiology*, 285(6), 2277–2283 (2003)
37. D. Fusco, G. Colloca, M. R. Lo Monaco, and M. Cesari. Effects of antioxidant supplementation on the aging process. *Clinical Interventions in Aging*, 2(3), 377–387 (2007)
38. P. Lobos, et al. Astaxanthin protects primary hippocampal neurons against noxious effects of Abeta-oligomers. *Neural Plast.* 3456783-1 (2016)
39. Chang X, Rong C, Chen Y et al. (-)-Epigallocatechin-3-gallate attenuates cognitive deterioration in Alzheimer's disease model mice by upregulating neprilysin expression. *Exp Cell Res.* 2015;334(1):136–45
40. Robert J, Williams J, Spencer PE. Flavonoids, cognition, and dementia: Actions, mechanisms, and potential therapeutic utility for Alzheimer disease. *Free Radical Biology and Medicine.* 2012; 52 (1):35-45
41. Shi C, Wu F, Xu J. H₂O₂ and PAF mediate Abeta₁₋₄₂-induced Ca²⁺ dyshomeostasis that is blocked by EGb761. *Neurochem Int.* 2010;56(18), 893–905
42. Qin XY, Cheng Y, Yu LC. Potential protection of curcumin against intracellular amyloid beta-induced toxicity in cultured rat prefrontal cortical neurons. *NeurosciLett.* 2010;480(1):21–24.
43. Lee MK, Kim SR, Sung SH, Lim D, Kim H, Choi H, Park HK, Je S, Ki YC. Asiatic acid derivatives protect cultured cortical neurons from glutamate-induced excitotoxicity. *Res CommunMolPatholPharmacol.* 2000;108(1–2):75–86
44. Howes MJ, Perry NS, Houghton PJ. Plants with traditional uses and activities, relevant to the management of Alzheimer's disease and other cognitive disorders. *Phytother Res.* 2003;17(1): 1–18
45. Sehgal N, Gupta A, Valli RK, Joshi SD, Mills JT, Hamel E et al. *Withania somnifera* reverses Alzheimer's disease pathology by enhancing low-density lipoprotein receptor-related protein in liver. *Proc Natl Acad Sci USA.* 2003;109(9):3510–15

poltekkesdepkes-sby.ac.id