LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER
REVIEW KARYA ILMIAH: JURNAL ILMIAH

Judul Artikel Ilmiah	:	**The Effect Of Alpha-Mangostin In Balancing The Ratio Of Cytokines Pro-And Anti-Inflammation-Gamma (Ifn-i3/II-10) And Severity of the Diseases In Mice Infected With Wycobacterium Tuberculosis Multidrug-Resistent**
Nama semua penulis	:	Dyah Kunthi Nugrahaeni, Suharyo Hadisaputro, **Ari Suwondo**, Edi Dharmana
Status Pengusul (coret yg tidak perlu)	:	~~Penulis Utama/ Penulis Utama & Korespondensi/Penulis Korespondensi~~/ **Penulis Anggota**

Status Jurnal:

• Nama Jurnal	:	**Asian Journal Of Pharmaceutical and Clinical Research**
• Tahun terbit/Vol/No/halaman	:	2016/Volume 8 /Nomor 9, Halaman 273-277
• Edisi (bulan, tahun)	:	3 Desember 2016
• ISSN	:	ISSN 2455-3891 (Online), 0974-2441 (Print)
• DOI	:	https://doi.org/10.22159/ajpcr.2016.v9s3.14544
• Alamat WEB Jurnal/ Proceeding	:	https://innovareacademics.in/journals/index.php/ajpcr/article/view/14544
• Terindex di	:	Scopus Q3 SJR 2016 : 0,282

Kategori Publikasi (beri tanda V yang sesuai)

• Jurnal Internasional	[√]	Jurnal internasional bereputasi & memiliki impact factor Q3 SJR 2016 : 0,282
	[ ]	Jurnal internasional bereputasi,
	[ ]	Jurnal Internasional
• Jurnal Nasional	[ ]	Jurnal Nasional Terakreditasi Dikti Peringkat 1 atau 2
	[ ]	Jurnal Nasional berbahasa Inggris Terindeks CABI atau Copernicus, atau Berbahasa Inggris Terkreditasi Peringkat 3 atau 4
	[ ]	Jurnal Nasional berbahasa Indonesia Terakreditasi peringkat 3 atau 4
	[ ]	Jurnal Nasional

Hasil Penilaian Peer Review:

No	Komponen yang dinilai	Nilai Maksimal Artikel Jurnal internasional bereputasi & memiliki impact factor Q3 SJR 2016 : 0,282	Nilai yang didapat artikel
a	Kelengkapan unsur isi artikel (10 %)	4	4
b	Ruang lingkup & kedalaman pembahasan (30 %)	12	11,5
c	Kecukupan dan kemutahiran data/informasi dan metodologi (30 %)	12	11
d	Kelengkapan unsur dan kualitas jurnal (30%)	12	11
	Nilai Total	**40**	37,5
	Nilai yang didapat pengusul:	**37,5 X 0.4 = 15 / 3 = 5**	

Catatan Penilaian artikel oleh Reviewer

a	Kelengkapan unsur isi artikel	Kelengkapan isi artikel sudah sesuai dengan pedoman Asian Journal Of Pharmaceutical and Clinical Research
b	Ruang lingkup & kedalaman pembahasan	Tulisan tentang, Alpha-Mangostin berpengaruh terhadap rasio Ifn-i3/II-10 dan mengurangi keparahan TB-MDR dengan menggunakan imunomodulator sudah sesuai dengan scope Asian Journal Of Pharmaceutical and Clinical Research.
c	Kecukupan dan kemutahiran data/informasi dan metodologi	Metode penelitian cukup lengkap namun dari 32 artikel yang diacu, 5 diantaranya lebih dari 10 tahun terakhir
d	Kelengkapan unsur dan kualitas jurnal	Merupakan jurnal internasional bereputasi dan masih terindex di scopus

Semarang, 22 Maret 2020
Reviewer 1

Dr. Ir. Mursid Rahardjo, M.Si
NIP. 196608261997031002
Unit kerja : Fakultas Kesehatan Masyarakat UNDIP
Jabatan : Lektor Kepala

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW KARYA ILMIAH: JURNAL ILMIAH

Judul Artikel Ilmiah	:	**The Effect Of Alpha-Mangostin In Balancing The Ratio Of Cytokines Pro-And Anti-Inflammation-Gamma (Ifn-i3/II-10) And Severity of the Diseases In Mice Infected With Wycobacterium Tuberculosis Multidrug-Resistent**
Nama semua penulis	:	Dyah Kunthi Nugrahaeni, Suharyo Hadisaputro, **Ari Suwondo**, Edi Dharmana
Status Pengusul (coret yg tidak perlu)	:	~~Penulis Utama/ Penulis Utama & Korespondensi/Penulis Korespondensi~~/ **Penulis Anggota**

Status Jurnal:

• Nama Jurnal	:	**Asian Journal Of Pharmaceutical and Clinical Research**
• Tahun terbit/Vol/No/halaman	:	2016/Volume 8 /Nomor 9, Halaman 273-277
• Edisi (bulan, tahun)	:	3 Desember 2016
• ISSN	:	ISSN 2455-3891 (Online), 0974-2441 (Print)
• DOI	:	https://doi.org/10.22159/ajpcr.2016.v9s3.14544
• Alamat WEB Jurnal/ Proceeding	:	https://innovareacademics.in/journals/index.php/ajpcr/article/view/14544
• Terindex di	:	Scopus Q3 SJR 2016 : 0,282

Kategori Publikasi (beri tanda V yang sesuai)

• Jurnal Internasional	[√]	Jurnal internasional bereputasi & memiliki impact factor Q3 SJR 2016 : 0,282
	[ ]	Jurnal internasional bereputasi,
	[ ]	Jurnal Internasional
• Jurnal Nasional	[ ]	Jurnal Nasional Terakreditasi Dikti Peringkat 1 atau 2
	[ ]	Jurnal Nasional berbahasa Inggris Terindeks CABI atau Copernicus, atau Berbahasa Inggris Terkreditasi Peringkat 3 atau 4
	[ ]	Jurnal Nasional berbahasa Indonesia Terakreditasi peringkat 3 atau 4
	[ ]	Jurnal Nasional

Hasil Penilaian Peer Review:

No	Komponen yang dinilai	Nilai Maksimal Artikel Jurnal internasional bereputasi & memiliki impact factor Q3 SJR 2016 : 0,282	Nilai yang didapat artikel
a	Kelengkapan unsur isi artikel (10 %)	4	3,5
b	Ruang lingkup & kedalaman pembahasan (30 %)	12	11
c	Kecukupan dan kemutahiran data/informasi dan metodologi (30 %)	12	11
d	Kelengkapan unsur dan kualitas jurnal (30%)	12	11
	Nilai Total	**40**	36,5
	Nilai yang didapat pengusul:	**36,5 X 0.4 = 14,6 / 3 = 4,866**	

Catatan Penilaian artikel oleh Reviewer

a	Kelengkapan unsur isi artikel	Kelengkapan isi baik dan sesuai dengan paduan dari Asian Journal Of Pharmaceutical and Clinical Research yaitu Introduction methods, Results, Discussion, conclusion, references.
b	Ruang lingkup & kedalaman pembahasan	pembahasan artikel cukup baik dengan kesimpulan bahwa Alpha-Mangostin berpengaruh terhadap rasio Cytokines Pro-And Anti-Inflammation-Gamma(Ifn-i3/II-10) dan mengurangi keparahan TB-MDR dengan menggunakan imunomodulator.
c	Kecukupan dan kemutahiran data/informasi dan metodologi	Metode penelitian sesuai dengan tujuan penelitian dan artikel ini menggunakan referensi yang cukup yaitu 32 karya ilmiah meskipun 5 diantaranya kurang uptodate.
d	Kelengkapan unsur dan kualitas jurnal	Artikel terbit di jurnal masih terindex di scopus Q3 SJR 0,282, editor pada jurnal berasal lebih dari 4 negara.

Semarang, 19 Maret 2020
Reviewer 2

Dr. dr. Suhartono, M.Kes
NIP. 196204141991031002
Unit kerja : Fakultas Kesehatan Masyarakat UNDIP
Jabatan : Lektor Kepala

Bukti Indexing

Document details

‹ Back to results | ‹ Previous 18 of 20 Next ›

Export Download Print E-mail Save to PDF Add to List More... ›

View at Publisher

Asian Journal of Pharmaceutical and Clinical Research
Volume 9, December 2016, Pages 273-277

The effect of alpha-mangostin in balancing the ratio of cytokines pro-and anti-inflammation-gamma (IFN-γ/il-10) and severity of the disease in mice infected with Mycobacterium tuberculosis multidrug-resistant (Article) (Open Access)

Nugrahaeni, D.K.[a,b], Hadisaputro, S.[a], Suwondo, A.[a], Dharmana, E.[a]

[a]Doktoral Program of Medical and Health Science, Faculty of Medicine, Diponegoro University, Semarang, Central Java, Indonesia
[b]Public Health Study Program, School of Health Sciences Jenderal Achmad Yani, West Java, Indonesia

Abstract

View references (32)

Objective: The objective of this study was observed to measure the effect of alpha-mangostin in balancing the ratio of interferon-gamma (IFN-γ) and interleukin-10 (IL-10), and the severity of the disease in mice which infected with Mycobacterium tuberculosis multidrug-resistant (TB-MDR). Method: Infected BALB/c mice were consisted of five groups: Treated with anti-TB drugs+α-mangostin, treated with anti-TB drugs, given α-mangostin during treatment, and control group. Cytokine levels of culture supernatant of spleen cells were measured by enzyme-linked immunosorbent assay. The number of bacterial colonies was derived from a primary cell culture of bronchoalveolar lavage. Statistical analysis was performed with Anova, Kruskal-Wallis test and correlation Pearson, and Spearman-rank test. Result: Median IFN-γ production was higher in mice, which given with α-mangostin during treatment is 1838.2 pg/ml and control is 1585.5 pg/ml compared treated with anti-TB drugs+α-mangostin (1312 pg/ml) and anti-TB drugs (1429.3 pg/ml) ($p>0.05$). The highest result production of median IL-10 in the 3th group is (465.91 pg/ml) and the lowest in the control group is 195.29 pg/ml, $p>0.05$. Median IFN-γ/IL-10 ratio of the 3th group very low (3.94), it means the 3th group is experienced with severity of TB. Alpha-mangostin was decreased in severity of disease based on the number of TB-MDR bacterial colonies ($p\leq0.05$). Conclusion: α-mangostin have an effect on the balancing IFN-γ/IL-10 ratio and reduce a severity of TB-MDR with using immunomodulator. © 2016 The Authors. Published by Innovare Academic Sciences Pvt Ltd.

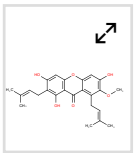
SciVal Topic Prominence

Topic: Mangostin | Garcinia | Xanthone Derivative

Prominence percentile: 95.946

Chemistry database information

Substances



Author keywords

Alpha-mangostin | Interferon-γ/interleukin-10 ratio | Number of tuberculosis multidrug-resistant bacterial colonies | Tuberculosis multidrug-resistant

Source details

Asian Journal of Pharmaceutical and Clinical Research

Scopus coverage years: from 2009 to 2018
(coverage discontinued in Scopus)
Publisher: Asian Journal of Pharmaceutical and Clinical Research
ISSN: 0974-2441 E-ISSN: 2455-3891
Subject area: Pharmacology, Toxicology and Pharmaceutics: Pharmaceutical Science | Medicine: Pharmacology (medical) | Pharmacology, Toxicology and Pharmaceutics: Pharmacology

CiteScore 2017
0.6

SJR 2019
0.139

SNIP 2019
0.534

View all documents > | Set document alert | Save to source list

CiteScore | CiteScore rank & trend | Scopus content coverage

Improved CiteScore methodology

CiteScore 2017 counts the citations received in 2014-2017 to articles, reviews, conference papers, book chapters and data papers published in 2014-2017, and divides this by the number of publications published in 2014-2017. Learn more >

CiteScore 2017

$$0.6 = \frac{1{,}617 \text{ Citations 2014 - 2017}}{2{,}773 \text{ Documents 2014 - 2017}}$$

Calculated on 01 May, 2018

= —

CiteScore rank 2017

Category	Rank	Percentile
Pharmacology, Toxicology and Pharmaceutics Pharmaceutical Science	#111/178	37th
Medicine Pharmacology (medical)	#179/238	24th

View CiteScore methodology > | CiteScore FAQ > | Add CiteScore to your site

Asian Journal of Pharmaceutical and Clinical Research

Discontinued in Scopus as of 2018

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
India Universities and research institutions in India	Medicine Pharmacology (medical) Pharmacology, Toxicology and Pharmaceutics Pharmaceutical Science Pharmacology	Asian Journal of Pharmaceutical and Clinical Research	30

PUBLICATION TYPE	ISSN	COVERAGE
Journals	09742441, 24553891	2009-2018

SCOPE

Information not localized

FIND SIMILAR JOURNALS

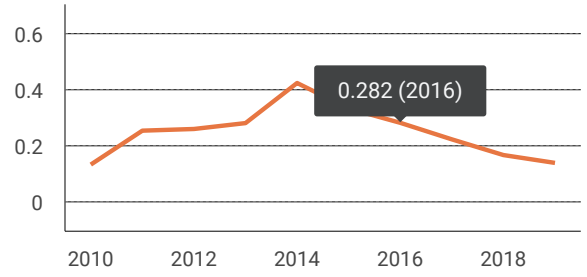
1
International Journal of Applied Pharmaceutics
IND
56%
similarity

2
International Journal of Green Pharmacy
IND
35%
similarity

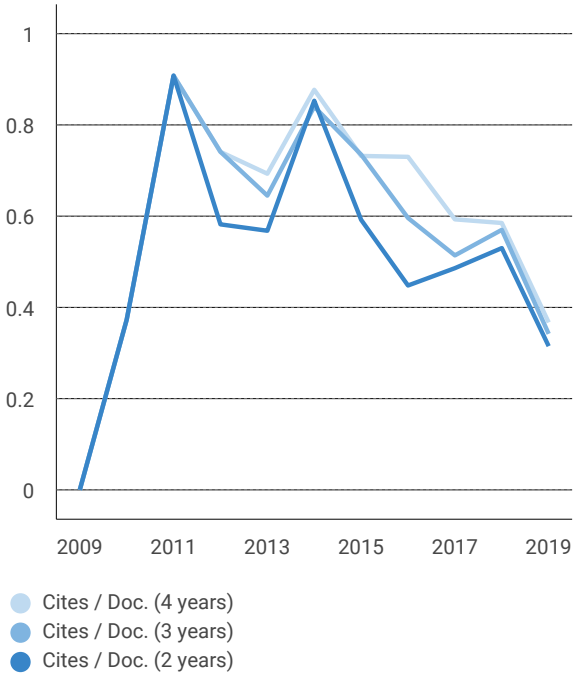
3
Indian Drugs
IND
30%
similarity

4
Pha
ITA

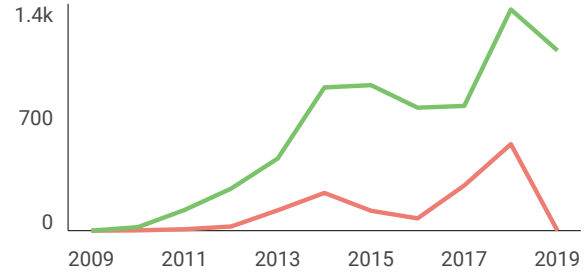
SJR



Citations per document

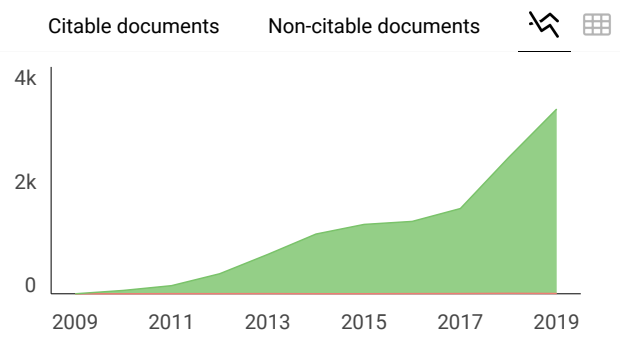


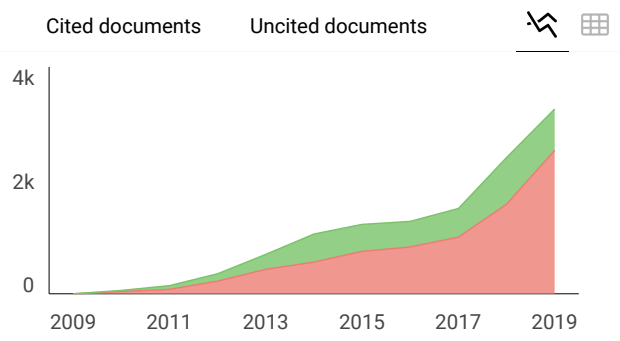
Total Cites Self-Cites



External Cites per Doc Cites per Doc

% International Collaboration





← Show this widget in your own website

Just copy the code below and paste within your html code:

```
<a href="https://www.scimag
```

Metrics based on Scopus® data as of April 2020

T **Thamara Melo** 7 months ago

Dear Scimago Team,
Does the Asian Journal of Pharmaceutical and Clinical Research still coverage by Scopus and Elsevier 2020?

reply

SCImago Team

Melanie Ortiz 7 months ago

Dear Thamara,
Thank you very much for your comment.
All the metadata have been provided by Scopus /Elsevier in their last update sent to SCImago, including the Coverage's period data. The SJR for 2019 was released on 11 June 2020. We suggest you consult the Scopus database directly to see the current index status as SJR is a static image of Scopus, which is changing every day.
Best Regards, SCImago Team

Asian Journal of Pharmaceutical and Clinical Research
E-ISSN: 2455-3891
P-ISSN: 0974-2441
EMBASE

Welcome to AJPCR (Online ISSN: 2455-3891 | Print ISSN: 0974-2441)

AJPCR (Asian J Pharm Clin Res) started in the year 2008 and is a peer-reviewed monthly (onward Jan 2017) Open Access Journal. The journal publishes original work which has any correlation and impact in the field of Pharmaceutical Sciences and Clinical Research (Pharmacognosy, Natural Product, Pharmaceutics, Novel Drug Delivery, Pharmaceutical Technology, Biopharmaceutics, Pharmacokinetics, Pharmaceutical/Medicinal Chemistry, Computational Chemistry, Drug Design, Pharmacology, Pharmaceutical Analysis, Pharmacy Practice, Clinical Pharmacy, Pharmaceutical Biotechnology, Pharmaceutical Microbiology and Medicine etc). AJPCR publishes it as an original research article, short communication and case reports. The journal also publishes Reviews to keep readers up to pace with the latest advances under mentioned scopes.

Why publish with AJPCR?

- Timely decisions: The standard time from submission to first decision is 20 days for regular articles
- Timely broadcasting: The average time from initial submission to publication for regular Research Articles is 40 days,
- Constructive reviews from renowned scientist and researcher at all editorial levels
- No page limits for regular articles.

Abstracting and Indexing

Google Scholar, Elsevier Products (EMBASE & EBSCO), SCImago(SJR), Index Copernicus (ICV-2019: 133.59), CNKI (China Knowledege Resource Integrated Database), CAS, CASSI (American Chemical Society), ICAAP, Scientific commons, PSOAR, Open-J-Gate, Index Medicus for WHO South-East Asia (IMSEAR), OAI, LOCKKS, OCLC (World Digital Collection Gateway), UIUC.

Editorial Board 4 Negara

Asian Journal of Pharmaceutical and Clinical Research
E-ISSN: 2455-3891
P-ISSN: 0974-2441
EMBASE

Editorial Board

Editorial Board

AJPCR is committed to have dynamic and potential advisory-editorial board. Those established in the field can directly send their resume. New people are first needed to serve as referee before being considered member of advisory-editorial board. Email your resume to editor@ajpcr.com

Editor-in-Chief

- **Dr. Anurekha Jain**
  Dept. of Pharmaceutical Sciences, Jyoti Mahila Vidyapeeth University, Jaipur, Rajasthan
  Email: anurekhajain@jvwu.ac.in, editor@ajpcr.com

Associate Editor

- **Dr. Nuray Arı**
  Prof., Department of Pharmacology, Faculty of Pharmacy, Ankara University, 06100 Ankara, Turkey. Email: ari@ankara.edu.tr
- **Lakshmi Narasmiha Rao Katakam**
  Analytical Development, Saptalis Pharmaceuticals LLC, Hauppauge, New York, USA 11788.
  Email: klnrao16@gmail.com

Assistant Editor

- **Dr. Omotoso Abayomi Ebenezer**
  Prof., Department of Pharmaceutical & Medicinal Chemistry. Faculty of Pharmaceutical Sciences, University of Port Harcourt, Nigeria. Email: abatoseb2001@yahoo.com
- **Dr. Vimal Kumar Jain**
  Principal, ITM School of Pharmacy, ITM Universe, Vadodara & Associate Dean, Pharmacy, GTU, Ahmedabad

Editorial Board Members

- **Dr. Vikas Sharma**
  Shri Rawatpura Sarkar Institute of Pharmacy, Datiya, MP, India
- **Dr. Rupesh Kumar Gautam**
  Associate Prof., ADINA Institute of Pharmaceutical Sciences, Sagar, MP, India

Editorial office

Asian Journal of Pharmaceutical and Clinical Research
B-11, In front of Bima Hospital, Nai Abadi, Mandsaur 458001, MP, India
E-mail:editor@ajpcr.com

Tabel Of Content Dari 2 Negara/ Abstrak Peserta Dari 2 Negara

Asian Journal of Pharmaceutical and Clinical Research
E-ISSN: 2455-3891
P-ISSN: 0974-2441
EMBASE

CASE STUDY(S)

RIFAXIMIN INDUCED HYPONATREMIA: A CASE REPORT

PRABHAT AGRAWAL, MANISH BANSAL, SHALINI UPADHYAY, ANJALIKA GUPTA

Pages 1

View PDF Abstract Download PDF

REVIEW ARTICLE(S)

ENTERIC FEVER IN TRAVELERS: AN UPDATED INSIGHT

VARSHIL MEHTA

Pages 2-5

View PDF Abstract Download PDF

A REVIEW ON BIOANALYTICAL METHOD DEVELOPMENT AND VALIDATION

TIJARE LK, RANGARI NT, MAHAJAN UN

Pages 6-10

View PDF Abstract Download PDF

ISOLATION AND CHARACTERIZATION OF N-HEPTACOSANYL OLEATE FROM THE WHOLE AERIAL PARTS OF CENTELLA ASIATICA LINN.

RASHMI SAXENA PAL, YOGENDRA PAL, PRANAY WAL, VIJENDER SINGH

Pages 23-25

View PDF Abstract Download PDF

AN OVERVIEW ON MEMORY DYSFUNCTION, TYPES OF MEMORY, AND ITS CLINICAL DISORDERSÂ€

ROHIT JAYSING BHOR

Pages 11-15

View PDF Abstract Download PDF

A REVIEW ON NEW TREATMENT STRATEGIES FOR ALZHEIMER'S DISEASE AS NEURODEGENERATIVE DISEASE AND ITS RISK FACTOR CAUSE, SYMPTOMS, AND TREATMENT AT WORLDWIDEÂ€

ROHIT JAYSING BHOR

Pages 16-22

View PDF Abstract Download PDF

A REVIEW ON THE NEURAL CIRCUITS IN ANXIETY DISORDERS

ASHWANI ARYA, GULSHAN SINDHWANI

Pages 26-31

View PDF Abstract Download PDF

A REVIEW ON VOICE ACTIVITY DETECTION AND MEL-FREQUENCY CEPSTRAL COEFFICIENTS FOR SPEAKER RECOGNITION (TREND ANALYSIS)

P. MAHALAKSHMI

Pages 360-363

View PDF Abstract Download PDF

ORIGINAL ARTICLE(S)

ASSESSMENT OF MICROALBUMINURIA IN ESSENTIAL HYPERTENSIVES AND ITS RESPONSE TO ANGIOTENSIN-CONVERTING ENZYME INHIBITOR THERAPY

PREETI SHARMA, PRADEEP KUMAR, RACHNA SHARMA, TRIPATHI GK, GAURAV GUPTA

Pages 32-34

View PDF Abstract Download PDF

QUALITATIVE PHYTOCHEMICAL SCREENING AND ANTIOXIDANT ACTIVITY OF ELYTRARIA ACAULIS LINDAU (ACANTHACEAE) RESEARCH ARTICLE

MANIGANDAN M, KOLANJINATHAN K

THE EFFECT OF ALPHA-MANGOSTIN IN BALANCING THE RATIO OF CYTOKINES PRO-AND ANTI-INFLAMMATION-GAMMA (IFN-Î³/IL-10) AND SEVERITY OF THE DISEASE IN MICE INFECTED WITH MYCOBACTERIUM TUBERCULOSIS MULTIDRUG-RESISTANT

DYAN KUNTHI NUGRAHAENI, SUHARYO HADISAPUTRO, ARI SUWONDO, EDI DHARMANA

Pages 273-277

View PDF Abstract Download PDF

ISOLATION AND IDENTIFICATION OF BACTERIOCIN PRODUCING MICROBES USING BIOCHEMICAL AND MOLECULAR TOOLS AND ANALYSIS OF ITS BIOPRESERVATION POTENTIAL

PARMAR KESHRI NANDAN, ANSHITA NAGAR

Pages 278-282

View PDF Abstract Download PDF

EVALUATION OF KNOWLEDGE, AWARENESS, AND PRACTICE OF PHARMACOVIGILANCE AMONG PRACTICING DOCTORS

SANTHOSH KUMAR MADHUSUDHAN, SHASHIKALA GH

Pages 283-286

View PDF Abstract Download PDF

DOCKING STUDIES ON ANTIDIABETIC MOLECULAR TARGETS OF PHYTOCHEMICAL COMPOUNDS OF SYZYGIUM CUMINI (L.) SKEELS

SMRUTHI G, MAHADEVAN V, VADIVEL V, BRINDHA P

Pages 287-293

View PDF Abstract Download PDF

HYPOMETHYLATION OF DEOXYRIBONUCLEIC ACID IN TESTICULAR TISSUE DUE TO ARSENIC EXPOSURE IN MICE

AKHILESHWARI NATH, PRIYANKA, ASEEM KUMAR ANSHU, CHANDAN KUMAR SINGH, SACHIDANANDA BEHERA, JITENDRA KUMAR SINGH

Pages 294-296

View PDF Abstract Download PDF

A STUDY OF RELATION BETWEEN BODY MASS INDEX AND DYSMENORRHEA AND ITS IMPACT ON DAILY ACTIVITIES OF MEDICAL STUDENTS

DIPTI MOHAPATRA, TAPASWINI MISHRA, MANASI BEHERA, PRIYAMBADA PANDA

Pages 297-299

View PDF Abstract Download PDF

ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 9, Suppl. 3, 2016

Online - 2455-3891
Print - 0974-2441

Research Article

DUCTAL CARCINOMA *IN SITU* AND INVASIVE BREAST CANCER-BASED DIFFERENTIAL GENE EXPRESSION STUDY FOR THERAPEUTIC DEVELOPMENT

HARSHITHA GOPISETTY RAMACHANDRA[1], INAMUL HASAN MADAR[2], SEETHALAKSHMI SAKTHIVEL[1], IFTIKHAR ASLAM TAYUBI[3], SKM HABEEB[1]*

[1]Department of Bioinformatics, School of Bio-Engineering, SRM University, Chennai - 603 203, Tamil Nadu, India. [2]Division of Chemical Engineering & Bio Engineering, Department of Bio Engineering, Hanyang University, Seoul, South Korea. [3]Faculty of Computing and Information Technology, King Abdulaziz University, Rabigh-21911, Saudi Arabia. Email: habeeb_skm@yahoo.co.in

Received: 26 July 2016, Revised and Accepted: 27 August 2016

ABSTRACT

Objective: Breast cancer is the second most common cancer in women globally. Multiple inherited mutations in genes are predominantly associated with breast cancer. The gene expression profiling of breast tumors generated by DNA microarray analysis provides molecular phenotyping that determines and characterizes the classifications of these tumors.

Methods: In this work, we used gene expression profiling of breast cancer samples from Gene Expression Omnibus (GEO) database. The dataset GSE41194, retrieved from GEO, was used to investigate differential gene expression in ductal carcinoma *in situ* (DCIS) and invasive breast cancer (IBC). The dataset contains 26 DCIS and 24 IBC samples. The data were analyzed in R and Bioconductor. To normalize the data Robust Multiarray Average (RMA) method was applied, limma software was used to identify the differentially expressed genes (DEGs) in DCIS and IBC; an adjusted p value ≤0.05 was used to filter differentially expressed probe sets, and a fold change (FC) ≥ 2 to identify upregulated and ≤−2 for downregulated genes. The DEGs retrieved were clustered and annotated using Database for Annotation, Visualization and Integrated Discovery (DAVID) Bioinformatics Resources with an EASE score ≤0.1 and count 2.

Results: The analysis obtained 72 DEGs with a p≤0.05. The FC≥2 identified 38 upregulated probesets and FC≤−2 identified 34 downregulated probe sets. The up and downregulated genes obtained in various comparisons were characterized based on gene ontology (GO) and pathway analyses in DAVID, which retrieved six genes that had principal pathways targeting breast cancer.

Conclusion: Identification of these genes and pathways enhances the knowledge and progression of DCIS to IBC; paving a novel way for developing new therapies for treating patients with breast cancer.

Keywords: Molecular phenotyping, Gene Expression, Ductal carcinoma *in situ*, Invasive breast cancer.

 DOI: http://dx.doi.org/10.22159/ajpcr.2016.v9s3.14317

INTRODUCTION

Breast cancer is the most commonly diagnosed malignancy among females. While decrease in both, breast cancer incidence and mortality, have been apparent in recent years, the societal and economic impact of this malignancy continues to be enormous [1]. The cases of incidence were 1.8 million in 2013 and 464 thousand deaths approximately [2]. Nearly, 30% of all cancers in women occur in breast both in the developed and the developing world [3]. The genetic abnormalities such as variations in high-penetrance genes play a major role in about 90% of breast cancer cases. Several risk factors for breast cancer have been identified. Some mutations particularly in *BRCA1, BRCA2, p53*, *PTEN, ATM, NBS1,* and *LKB1* result in a very high risk for breast cancer [4].

Breast cancers are of two different types, invasive and non-invasive. Invasive cancers spread to other tissues in the breast from the milk ducts, whereas the non-invasive cancers do not invade other tissues in the breast. The non-invasive breast tumors are referred to as *"in situ."* These are classified as ductal carcinoma *in situ* (DCIS) or intraductal carcinoma and lobular carcinoma *in situ* [4].

DCIS is characterized by malignant epithelial cells confined to the ductal system of the breast, without evidence of invasion through the basement membrane into the surrounding stroma [5]. Once thought to be a rare breast lesion, DCIS now constitutes 20% of all newly diagnosed breast cancer cases (http://seer.cancer.gov, Accessed October 2013; http://www.cancer.org, Accessed June 1, 2012). Invasive breast cancer (IBC) starts in a milk duct of the breast, breaks through the wall of the duct and grows into the fatty tissue of the breast. At this point, it may be able to spread (metastasize) to other parts of the body through the lymphatic system and bloodstream [5]. Invasive breast carcinoma constitutes 70-85% of the incidence; the remaining 15-30% are *in situ* carcinomas, 80% of which are DCIS (http://www.cancer.org, Accessed June 1, 2012).

The factors that stimulate the breast cancer risk include gender, age, family history and additionally alcohol intake, dietary fat, obesity in postmenopausal age, and hormonal stimulations. These factors are said to have increased the progression of breast cancer along with the individual factors almost half a century. The dramatic increase in breast cancer research and its prevention has shown positivist approach in the current years [6].

With the advent of microarray technology, the procedure to measure gene expression on a genome-wide scale has transformed cancer biology by providing the tools to measure differences in diseases [7]. This technology utilizes differential gene expression patterns in cancer cells and normal cells or those of other subtypes of cancer to identify the genes that are over-expressed and under-expressed [8]. However, the analysis produces a large amount of data, which is challenging to interpret. With the employment of modern computational and statistical analysis packages and bioinformatics tools, the data analysis has been greatly flexible in the recent years. The microarray technology has been applied to a range of applications, including discovering novel disease subtypes, developing new diagnostic tools, and identifying underlying mechanisms of disease or drug response [9].

ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 9, Suppl. 3, 2016

Online - 2455-3891
Print - 0974-2441

Research Article

LACTOBACILLUS-FERMENTED PLANT JUICE AS A POTENTIAL INGREDIENT IN COSMETICS: FORMULATION AND ASSESSMENT OF NATURAL MOUTHWASH

SASITHORN SIRILUN[1], BHAGAVATHI SUNDARAM SIVAMARUTHI[1], NAPHATSORN KUMAR[2], PERIYANAINA KESIKA[1], SARTJIN PEERAJAN[3], CHAIYAVAT CHAIYASUT[1]*

[1]Department of Pharmaceutical ScienceS, Faculty of Pharmacy, Chiang Mai University, Thailand. [2]School of Cosmetic Science, Mae Fah Luang University, Thailand. [3]Health Innovation Institute, Chiang Mai, Thailand. Email: chaiyavat@gmail.com

Received: 15 August 2016, Revised and Accepted: 29 August 2016

ABSTRACT

Objective: Oral care cosmetics are essential for all populations and are systematically used to treat oral problems. The chemicals free natural cosmetics are the choice of many people. Thus, this study was aimed to formulate and to assess the natural mouthwash (MW) solution from *Lactobacillus*-fermented Thai medicinal plants juice.

Methods: The selected (betel, green tea, clove, black galingale, mangosteen, and noni) plant juices were subjected to *Lactobacillus plantarum* mediated fermentation. The fermented plant juices (FPJ) were formulated into MW solution with different concentrations of peppermint oil. MW formulations were assessed for physical appearance, stability, and anti-microbial activities.

Results: About 2% of peppermint oil in FPJ was found as organoleptically optimum. The pH and refractive indexes of the MWs were not affected during storage and stability assessments. All the FPJ-MWs formulations showed antimicrobial activity against Group A *Staphylococcus*, and other oral pathogens - *Escherichia coli*, *Streptococcus aureus*, and *Pseudomonas aeruginosa.* Moreover, black galingale, mangosteen, and noni based MW formulas also exhibited anti-candida activity. The MW made from fermented black galingale (*Kaempferia parviflora*) juice was the most potent antimicrobial formulation with excellent physical stability.

Conclusion: The study concluded that fermented plant-herbal juices can be used as natural MW recipe with 2% of peppermint oil to improve the flavor and aroma. The formulations were stable, free of microbial contamination, and also exhibited antimicrobial activity. Further extended stability study and clinical trials are necessary to develop a commercial FPJ-based natural MW recipe.

Keywords: Fermentation, Formulation, *Lactobacillus*, Mouthwash.

 DOI: http://dx.doi.org/10.22159/ajpcr.2016.v9s3.14707

INTRODUCTION

Oral care cosmetics are essential for all populations and are systematically used to treat oral malodor, prevent tooth decay, and for general sanitation purposes. There are many oral care preparations among that toothpaste and mouthwashes (MWs) are most popular. The healthcare market for health care reaches about $ 4.1 billion and the significant share (73.4%) from toothpaste and toothbrushes marketing worldwide [1]. Several kinds of natural toothpaste formula and the products are available, whereas very few natural MW formulas are existing.

In general, MW is made out of any active compounds, surfactants, flavor, preservatives, and water [2]. The botanical extracts (*Camellia* spp., *Piper betel*), essential oils, antibacterials (chlorhexidine, triclosan and cetylpyridinium chloride, fluoride, salts of zinc), and phytochemicals are used as active principles in MW [3]. Some of the MW preparations contain alcohol to its freshness, but many companies claim that their products are alcohol-free and safe for alcohol-sensitive customers. The medicated MW products, which contain chlorhexidine and its salt, are commonly used and prescribed by several dentists. Even though chlorhexidine is considerably safe and efficient, it causes some adverse effects like discoloration of the teeth, desquamation of oral mucosa, taste alteration, burning sensation at oral mucosa and it even affects fibroblast and keratinocyte cell proliferation, which leads to impairment in wound healing [4]. The opposing effects of chemically formulated MW urge the researchers to work on natural products.

In Thailand, several native plants have been traditionally used as mouth sanitizer and oral medicine. Based on the usage and popularity among Thai people, we have selected six plants for the study such as betel (*P. betel* L.), green tea (*Camellia sinensis* [L.] Kuntze), clove (*Syzygium aromaticum* [L.] Merrill and Perry), black galingale (*Kaempferia parviflora* Wallich. ex Baker.), mangosteen (*Garcinia mangostana* L.), and noni (*Morinda citrifolia* L.).

Betel (*P. betel* L.) is commonly used as chewing mouth freshener and used in Thai cooking (e.g. Miang-Khum Bai Chaplu). The ethanolic extract of betel leaf has antioxidant, analgesic, antibacterial, and anti-inflammatory activity [5,6].

Green tea is obtained from the leaf of *C. sinensis* (L.) Kuntze. It is one of the most popular healthy herbal beverages in the world. Catechins are the most abundant active ingredient present in green tea, possessing many biological activities including antimicrobial activity [7,8].

Clove (*S. aromaticum* [L.] Merrill and Perry) is one of the traditional herbs used by Thai people for dental pain. Clove oil is also used in dentistry procedures as a disinfectant. It was reported that methanolic extract and flavones of clove are active against periodontal pathogens and also have anti-inflammatory, antioxidant properties [9-11].

Black galingale (*K. parviflora* Wallich. ex Baker.) is used as a tonic to treat gastrointestinal problems, leucorrhea, and oral diseases in Thai folk medicine. Black galingale extracts exhibit anti-inflammatory effects [12].

Mangosteen (*G. mangostana* L.) is a famous tropical plant and called "queen of fruit." It is known for antimicrobial, antioxidant, antibacterial, anti-HIV, cytotoxic, anti-inflammatory, and anti-histamine activities [13].