

[< Back to results](#) | [< Previous](#) 9 of 15 [Next >](#)[↗ Export](#) [↓ Download](#) [🖨 Print](#) [✉ E-mail](#) [📄 Save to PDF](#) [☆ Add to List](#) [More... >](#)[View at Publisher](#)Pakistan Journal of Nutrition
Volume 15, Issue 1, 2016, Pages 40-44

Effect of vitamin A, zinc and vitamin E supplementation on immune response in seropositive leprosy subjects (Article) [\(Open Access\)](#)

Rahfiludin, M.Z.^a, Pramono, A.^b, Setiani, O.^a ^aDiponegoro University, Indonesia^bDepartment of Nutrition, Center of Nutrition Research (CENURE), Diponegoro University, Indonesia

Abstract

[View references \(18\)](#)

The immune response plays an important role in leprosy prevention. Here we analyzed the effect of vitamin A, zinc and vitamin E supplementation on the immune response in seropositive leprosy patients by measuring serum levels of retinol, zinc, α -tocopherol, interferon gamma (IFN- γ) and interleukin-2 (IL-2). Subjects were randomly divided into either the treatment or control group. The treatment group received high dose vitamin A once and a daily dose of Zn and vitamin E supplementation for 45 days, while the control group received pills that were identical in appearance but lacked supplements. Supplement consumption compliance was recorded weekly. After 45 days of supplementation, IFN- γ and IL-2 levels were measured again. Upon study initiation both groups had normal retinol, zinc and α -tocopherol serum levels. After 45 days, serum levels of retinol and α -tocopherol increased only in the supplementation group ($p = 0.046$ and $p = 0.033$, respectively), while zinc serum levels decreased in both the supplementation ($p = 0.001$) and placebo ($p = 0.000$) groups. IFN- γ levels decreased slightly in the supplementation group, although the change was not significant ($p = 0.098$). Meanwhile, IFN- γ levels in the control group decreased significantly ($p = 0.022$). IL-2 levels decreased slightly in both the supplementation and placebo groups, but the changes were not significant ($p = 0.421$ and $p = 0.556$, respectively). Together our results indicate that supplementation with zinc and vitamins A and E could be a useful alternative therapy for maintaining immune response of seropositive leprosy patients. © Asian Network for Scientific Information, 2016.

SciVal Topic Prominence

Topic: [Leprosy](#) | [Mycobacterium Leprae](#) | [Malondialdehyde](#)

Prominence percentile: 7.376

Author keywords

[IL-2](#) [Interferon- \$\gamma\$](#) [Leprosy seropositive](#) [Vitamin A](#) [Vitamin E](#) [Zinc](#)

Indexed keywords

EMTREE drug terms: [alpha tocopherol](#) [gamma interferon](#) [interleukin 2](#) [placebo](#) [retinol](#) [zinc](#)EMTREE medical terms: [adult](#) [Article](#) [caloric intake](#) [controlled study](#) [cytokine production](#)[diet supplementation](#) [enzyme linked immunosorbent assay](#)[high performance liquid chromatography](#) [human](#) [immune response](#) [leprosy](#)[mass spectrometry](#) [nutritional status](#) [randomized controlled trial](#)

Chemicals and CAS Registry Numbers:

alpha tocopherol, 1406-18-4, 1406-70-8, 52225-20-4, 58-95-7, 59-02-9; gamma interferon, 82115-62-6; interleukin 2, 85898-30-2; retinol, 68-26-8, 82445-97-4; zinc, 7440-66-6, 14378-32-6

[Metrics](#) [View all metrics >](#)

PlumX Metrics

Usage, Captures, Mentions,
Social Media and Citations
beyond Scopus.

Cited by 0 documents

Inform me when this document
is cited in Scopus:[Set citation alert >](#)

Related documents

Zinc supplementation could
modulate T cell to maintain
interleukin-2 level in seropositive
contact of leprosy patientsRahfiludin, M.Z., Wirjatmadi, B.,
Agusni, I.
(2011) *Medical Journal of
Indonesia*Correlation of zinc plasma and
IgM anti-PGL-1 levels among
close contact of leprosyRahfiludin, M.Z., Ginandjar, P.,
Pangestuti, D.R.
(2012) *Medical Journal of
Indonesia*Saliva as a diagnostic tool for
measurement of total antioxidant
capacity in children with leprosy
and born to leprosy parentPatni, V., Baliga, S., Sawal, S.
(2015) *Indian Journal of Leprosy*[View all related documents based
on references](#)[Find more related documents in
Scopus based on:](#)[Authors >](#) [Keywords >](#)

References (18)

[View in search results format >](#)

All Export Print E-mail Save to PDF Create bibliography

-
- 1 Agrewala, J.N., Kumar, B., Vohra, H.
Potential role of B7-1 and CD28 molecules in immunosuppression in leprosy
([Open Access](#))

(1998) *Clinical and Experimental Immunology*, 111 (1), pp. 56-63. Cited 28 times.
doi: 10.1046/j.1365-2249.1998.00463.x

[View at Publisher](#)
-
- 2 Bao, B., Prasad, A.S., Beck, F.W.J., Snell, D., Suneja, A., Sarkar, F.H., Doshi, N., (...), Swerdlow, P.
Zinc supplementation decreases oxidative stress, incidence of infection, and generation of inflammatory cytokines in sickle cell disease patients

(2008) *Translational Research*, 152 (2), pp. 67-80. Cited 104 times.
<http://sciencedirect.proxy.undip.ac.id:2048/science/journal/19315244>
doi: 10.1016/j.trsl.2008.06.001

[View at Publisher](#)
-
- 3 Chattree, V., Khanna, N., Rao, D.N.
Alterations in T cell signal transduction by M. leprae antigens is associated with downregulation of second messengers PKC, calcium, calcineurin, MAPK and various transcription factors in leprosy patients

(2007) *Molecular Immunology*, 44 (8), pp. 2066-2077. Cited 15 times.
www.elsevier.com/locate/molimm
doi: 10.1016/j.molimm.2006.09.008

[View at Publisher](#)
-
- 4 Cousins, R.J., Blanchard, R.K., Popp, M.P., Liu, L., Cao, J., Moore, J.B., Green, C.L.
A global view of the selectivity of zinc deprivation and excess on genes expressed in human THP-1 mononuclear cells ([Open Access](#))

(2003) *Proceedings of the National Academy of Sciences of the United States of America*, 100 (12), pp. 6952-6957. Cited 136 times.
doi: 10.1073/pnas.0732111100

[View at Publisher](#)
-
- 5 Engin, K.N.
Alpha-tocopherol: Looking beyond an antioxidant

(2009) *Molecular Vision*, 15, pp. 855-860. Cited 65 times.
<http://www.molvis.org/molvis/v15/a88/mv-v15-a88-engin.pdf>

[View at Publisher](#)
-
- 6 (2007) *Determining the risk of zinc deficiency: Assessment of dietary zinc intake*. Cited 5 times.
IZiNCG, Technical Brief No.3
<http://www.izincg.org/files/english-brief2.pdf>
-

- 7 Kassu, A., Yabutani, T., Mahmud, Z.H., Mohammad, A., Nguyen, N., Huong, B.T.M., Hailemariam, G., (...), Ota, F.

Alterations in serum levels of trace elements in tuberculosis and HIV infections
([Open Access](#))

(2006) *European Journal of Clinical Nutrition*, 60 (5), pp. 580-586. Cited 82 times.
doi: 10.1038/sj.ejcn.1602352

[View at Publisher](#)

- 8 Lima, E.S., Roland, I.D.A., Maroja, M.D.F., Marcon, J.L.

Vitamin A and lipid peroxidation in patients with different forms of leprosy
([Open Access](#))

(2007) *Revista do Instituto de Medicina Tropical de Sao Paulo*, 49 (4), pp. 211-214. Cited 12 times.
<http://www.scielo.br/pdf/rimtsp/v49n4/a03v49n4.pdf>
doi: 10.1590/s0036-46652007000400003

[View at Publisher](#)

- 9 Pinheiro, R.O., De Souza Salles, J., Sarno, E.N., Sampaio, E.P.

Mycobacterium leprae-host-cell interactions and genetic determinants in leprosy: An overview ([Open Access](#))

(2011) *Future Microbiology*, 6 (2), pp. 217-230. Cited 41 times.
doi: 10.2217/fmb.10.173

[View at Publisher](#)

- 10 Prasad, A.S.

Zinc: Mechanisms of host defense

(2007) *Journal of Nutrition*, 137 (5), pp. 1345-1349. Cited 194 times.
<http://jn.nutrition.org/cgi/reprint/137/5/1345>
doi: 10.1093/jn/137.5.1345

[View at Publisher](#)

- 11 Prasad, A.S.

Discovery of human zinc deficiency: Its impact on human health and disease
([Open Access](#))

(2013) *Advances in Nutrition*, 4 (2), pp. 176-190. Cited 288 times.
<http://advances.nutrition.org/content/4/2/176.full.pdf>
doi: 10.3945/an.112.003210

[View at Publisher](#)

- 12 Rahfiludin, M.Z., Wirjatmadi, B., Agusni, I., Dahlan, Y.P.

Zinc supplementation could modulate T cell to maintain interleukin-2 level in seropositive contact of leprosy patients ([Open Access](#))

(2011) *Medical Journal of Indonesia*, 20 (3), pp. 201-204. Cited 2 times.
<http://mji.ui.ac.id/journal/index.php/mji/article/download/454/445>
doi: 10.13181/mji.v20i3.454

[View at Publisher](#)

- 13 Schalcher, T.R., Borges, R.S., Coleman, M.D., Júnior, J.B., Salgado, C.G., Vieira, J.L.F., Romão, P.R.T., (...), Monteiro, M.C.

Clinical oxidative stress during leprosy multidrug therapy: Impact of dapsone oxidation ([Open Access](#))

(2014) *PLoS ONE*, 9 (1), art. no. e85712. Cited 19 times.
<http://www.plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0085712&representation=PDF>
doi: 10.1371/journal.pone.0085712

[View at Publisher](#)

□ 14 Scollard, D.M., Adams, L.B., Gillis, T.P., Krahenbuhl, J.L., Truman, R.W., Williams, D.L.

The continuing challenges of leprosy (Open Access)

(2006) *Clinical Microbiology Reviews*, 19 (2), pp. 338-381. Cited 496 times.
doi: 10.1128/CMR.19.2.338-381.2006

[View at Publisher](#)

□ 15 Trimbake, S.B., Sontakke, A.N., Dhat, V.V.
Oxidative stress and antioxidant vitamins in leprosy
(2013) *Int. J. Res. Med. Sci.*, 1, pp. 226-229. Cited 3 times.

□ 16 Vázquez, C.M.P., Netto, R.S.M., Barbosa, K.B.F., de Moura, T.R., de Almeida, R.P., Duthie, M.S., de Jesus, A.R.

Micronutrients influencing the immune response in leprosy

(2014) *Nutricion Hospitalaria*, 29 (1), pp. 26-36. Cited 8 times.
http://www.aulamedica.es/gdcr/index.php/nh/article/download/6988/pdf_33
doi: 10.3305/nh.2014.29.1.6988

[View at Publisher](#)

□ 17 Vijayaraghavan, R., Suribabu, C.S., Sekar, B., Oommen, P.K., Kavithalakshmi, S.N., Madhusudhanan, N., Panneerselvam, C.

Protective role of vitamin E on the oxidative stress in Hansen's disease (Leprosy) patients

(2005) *European Journal of Clinical Nutrition*, 59 (10), pp. 1121-1128. Cited 27 times.
<http://nature.proxy.undip.ac.id:2048/ejcn/index.html>
doi: 10.1038/sj.ejcn.1602221

[View at Publisher](#)

□ 18 WHO
Weekly epidemiological record: Global leprosy situation
(2012) *World Health Organization*, 34, pp. 317-328. Cited 19 times.

🔍 Pramono, A.; Department of Nutrition/Cenure, Diponegoro University, Jl. Dr. Sutomo No.18, Kampus Undip Rs Dr. Kariadi, Semarang, Indonesia

© Copyright 2018 Elsevier B.V., All rights reserved.

[Back to results](#) | [Previous](#) 9 of 15 [Next](#) >

[Top of page](#) ^

About Scopus

[What is Scopus](#)
[Content coverage](#)
[Scopus blog](#)
[Scopus API](#)
[Privacy matters](#)

Language

[日本語に切り替える](#)
[切换到简体中文](#)
[切换到繁体中文](#)
[Русский язык](#)

Customer Service

[Help](#)
[Contact us](#)

ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

RELX



1 document result

! Search tips

Show results for: TITLE-ABS-KEY (effect AND of AND vitamin AND a, AND zinc AND vitamin AND e AND supplementation AND on AND immune AND response AND ion AND seropositive AND leprosy AND subjects)

Search within results...



Documents Secondary documents Patents

View Mendeley Data (41)

Refine results

Limit to Exclude

Access type ⓘ

Open Access (1) >

Year

2016 (1) >

Author name

Pramono, A. (1) >

Rahfiludin, M.Z. (1) >

Setiani, O. (1) >

Subject area

Agricultural and Biological Sciences (1) >

Medicine (1) >

Nursing (1) >

Document type

Publication stage

Source title

Keyword

Affiliation

Analyze search results

Show all abstracts Sort on: Date (newest) ▾

All ▾ Export Download View citation overview View cited by Add to List ...

	Document title	Authors	Year	Source	Cited by
<input type="checkbox"/> 1	Effect of vitamin A, zinc and vitamin E supplementation on immune response in seropositive leprosy subjects <i>Open Access</i>	Rahfiludin, M.Z., Pramono, A., Setiani, O.	2016	Pakistan Journal of Nutrition 15(1), pp. 40-44	0

View abstract ▾ View at Publisher Related documents

Display: 20 ▾ results per page

1

^ Top of page

Source type 

Language 

Limit to Exclude

 Export refine

About Scopus

- What is Scopus
- Content coverage
- Scopus blog
- Scopus API
- Privacy matters

Language

- 日本語に切り替える
- 切换到简体中文
- 切换到繁體中文
- Русский язык

Customer Service

- Help
- Contact us

ELSEVIER

[Terms and conditions](#)  [Privacy policy](#) 

Copyright © Elsevier B.V . All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.



Thank you for using Scopus!



Please help us make Scopus better and more useful for everyone. Do you have a moment to answer a few questions around the purpose of your visit?



Scimago Journal & Country Rank

Enter Journal Title, ISSN or Publisher Name

Home

Journal Rankings

Country Rankings

Viz Tools

Help

About Us

Pakistan Journal of Nutrition

discontinued in Scopus as of 2018

35

H Index

Country Pakistan - SIR Ranking of Pakistan

Subject Area and Category Agricultural and Biological Sciences
Food Science

Medicine
Public Health, Environmental and Occupational Health

Nursing
Nutrition and Dietetics

Publisher Asian Network for Scientific Information

Publication type Journals

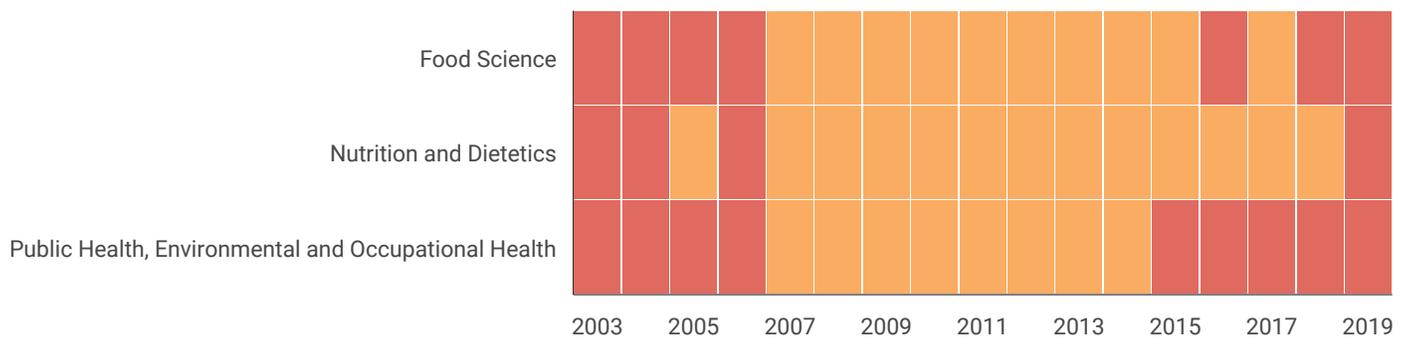
ISSN 16805194

Coverage 2002, 2005-2019

Scope Information not localized

[Join the conversation about this journal](#)

Quartiles

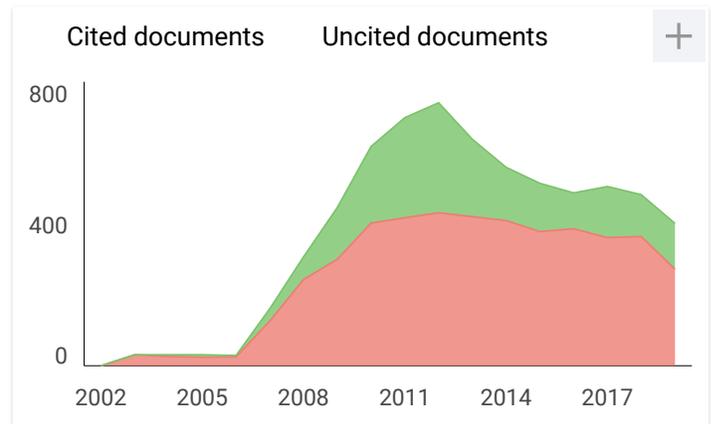
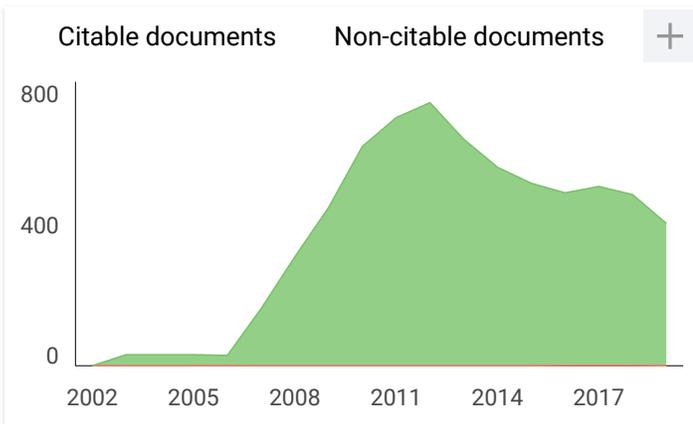
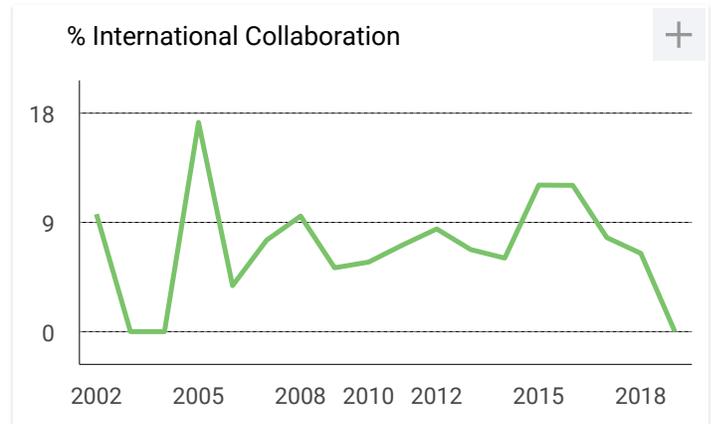
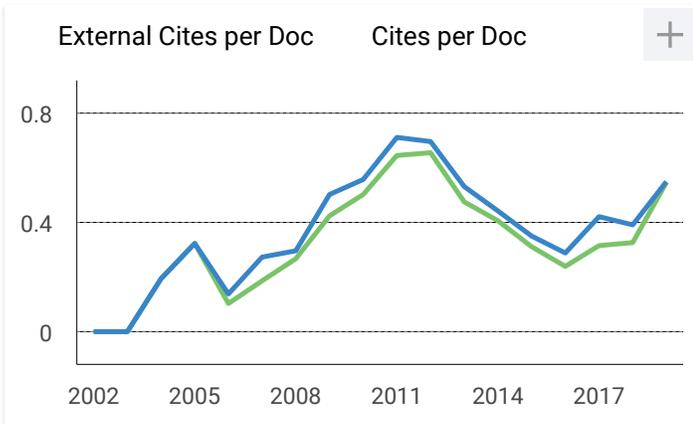
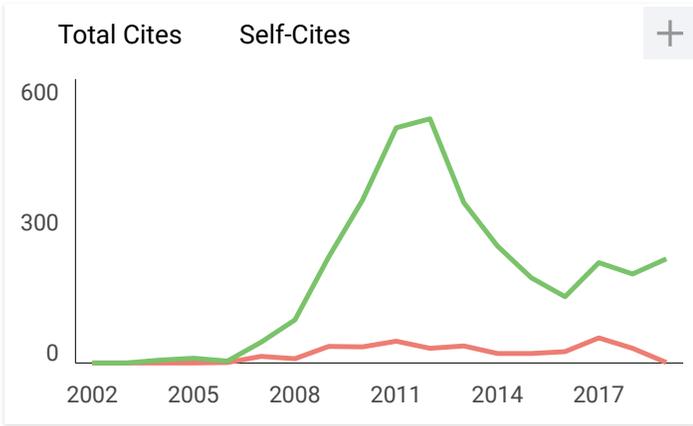
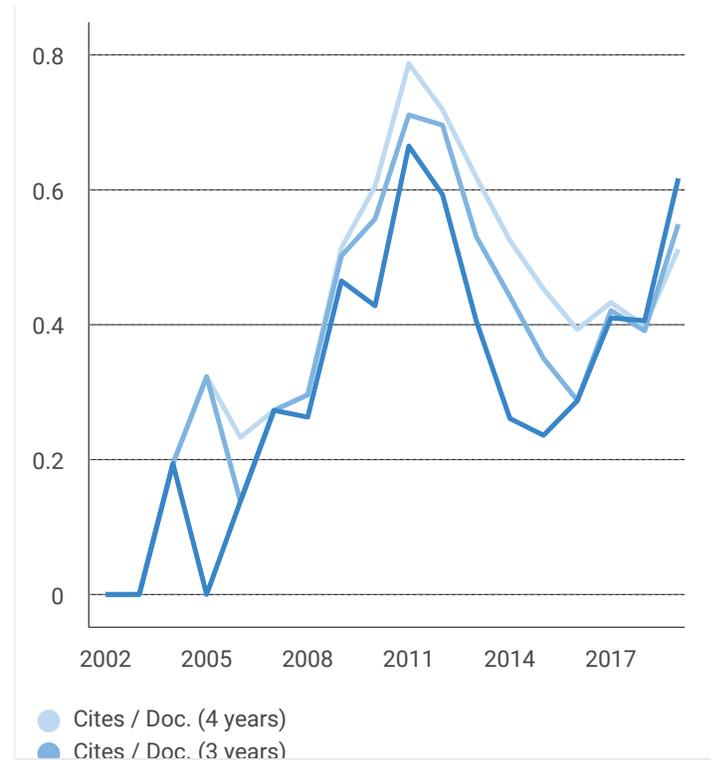


SJR



Citations per document





Show this widget in your own website

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

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



Pakistan Journal of Nutrition

Publisher: Asian Network for Scientific Information

eISSN: 1994-7984
pISSN: 1680-5194

Pakistan Journal of Nutrition is a leading international peer-reviewed journal covering research on human and clinical nutrition, animal nutrition and basic science as applied to nutrition. The Journal recognizes the multidisciplinary nature of nutritional science and includes material from all of the specialties involved in nutrition research, including molecular and cell biology and the emerging area of nutritional genomics.

Submit your best paper to PJN via [online submission system](#).Editor-in-Chief: [Reema Fayez Tayyem](#)

Navigation

- [Online First](#)
- [Current Issue](#)
- [Previous Issues](#)
- [Editorial Board](#)
- [Submit a Manuscript](#)
- [Guide to Authors](#)
- [Article Processing Charges](#)
- [Subscribe to E-alerts](#)

Volume 15, Number 1, 2016

Effects of Green Tea and Curcumin on Non-Enzymatic Antioxidants in Normal Mice

Ata Sedik Ibrahim Elsayed

Pakistan Journal of Nutrition Volume 15, Number 1, 1-8, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Feeding Value of Raw or Enzyme Treated Dandelion Leaves and Fenugreek Seeds Alone or in Combination in Meat Type Chicken

Saim Qureshi, M.T. Banday, Irfan Shakeel and S. Adil

Pakistan Journal of Nutrition Volume 15, Number 1, 9-14, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Alterations in Serum Biochemical Parameters in Response to Gasoline Inhalation and the Protective Effects of Green Tea and Curcumin

Ata Sedik Ibrahim Elsayed

Pakistan Journal of Nutrition Volume 15, Number 1, 15-22, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Physicochemical Properties and Mineral Compositions of Pawpaw and Watermelon Seed Oils

Banji Adaramola and Adebayo Onigbinde

Pakistan Journal of Nutrition Volume 15, Number 1, 23-27, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Characteristics of Ettawa Crossbred Dairy Goat Rumen Fluid and Digestibility of Palm Oil Industry By-Products

Arief, N. Jamarun and B. Satria

Pakistan Journal of Nutrition Volume 15, Number 1, 28-32, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Nutrient Contents of the Fresh Pulps and Dried Pulp Cakes of *Vitellaria paradoxa* of Gulu District, Uganda

Christine Oryema, Hannington Oryem-Origa and Nanna Roos

Pakistan Journal of Nutrition Volume 15, Number 1, 33-39, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

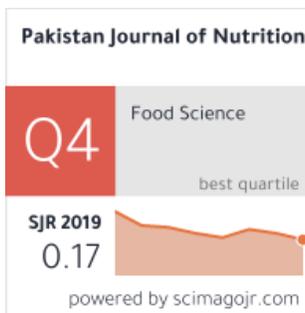
Effect of Vitamin A, Zinc and Vitamin E Supplementation on Immune Response in Seropositive Leprosy Subjects

M. Zen Rahfiludin, Adriyan Pramono and Onny Setiani

Pakistan Journal of Nutrition Volume 15, Number 1, 40-44, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

A Survey of Bovine Mummified Foetus and Foetal Wastage at Bodija Abattoir in Ibadan Nigeria



Indexed In

- [ASCI-Database](#)
- [Asian Digital Library](#)
- [Cambridge Scientific Abstract](#)
- [Chemical Abstract Services](#)
- [SCIMAGO](#)

M.A. Ogunbodede, G.M. Oladele and I.M. Akanbi

Pakistan Journal of Nutrition Volume 15, Number 1, 45-51, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

HOMA-IR Anomalies and Sugar Consumption in Young with Euglycemia

Juan Manuel Munoz Cano, Juan Cordova Hernandez, Xavier Boldo Leon and David del Valle Laveaga

Pakistan Journal of Nutrition Volume 15, Number 1, 52-57, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Use of Lignin Formacell of Empty Bunch Palm Fiber as Feed Supplement and Prebiotics Candidate in Ruminant

M. Prayuwidayati, T.C. Sunarti, Sumardi, Subeki and K.G. Wiryawan

Pakistan Journal of Nutrition Volume 15, Number 1, 58-65, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Study of Sensory Characteristics and Nutrient Content of Catfish and Tempeh-Based Drumstick as an Alternative Food for Children with Autism

Nany Suryani and Norhasanah

Pakistan Journal of Nutrition Volume 15, Number 1, 66-71, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Correlation Between Matrix Metalloproteinase 8 in Gingival Crevicular Fluid and Zinc Consumption

Nila Kasuma, Fadil Oenzil and Nur Indrawaty Lipoeto

Pakistan Journal of Nutrition Volume 15, Number 1, 72-75, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Effect of Dietary Phytocee and Zist on Broiler Performance and Carcass Characteristics

Mohamed E. Ahmed, Nasir H. Mohamed and Talha E. Abbas

Pakistan Journal of Nutrition Volume 15, Number 1, 76-79, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Growth Performance and Physiological Responses of Garut Lambs Fed Diets Mung Bean Sprout Waste at Different Times

Sri Rahayu, Mohamad Yamin, Cece Sumantri and Dewi Apri Astuti

Pakistan Journal of Nutrition Volume 15, Number 1, 80-84, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Concentrations of Fluoride in Drinking Water and Tea Samples and Associations with Dental Fluorosis

Sadaf Afzal, Salma Durrani, Ayesha Khan Malghani, Maria Khan, Naheed Sajjad and Nabeela Tariq

Pakistan Journal of Nutrition Volume 15, Number 1, 85-88, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Supplementation of Direct Fed Microbial (DFM) on *in vitro* Fermentability and Degradability of Ammoniated Palm Frond

Heni Suryani, M. Zain, R.W.S. Ningrat and N. Jamarun

Pakistan Journal of Nutrition Volume 15, Number 1, 89-94, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

Histological Identification of Animal Protein Ingredients

Valentina Krishtafovich, Dmitry Krishtafovich, Yuri Belkin and Roman Gubarev

Pakistan Journal of Nutrition Volume 15, Number 1, 95-98, 2016

[\[Abstract\]](#) [\[Fulltext PDF\]](#) [\[References\]](#)

[Home](#) · [Journals](#) · [For Authors](#) ·
[For Subscribers](#) · [ASCI](#)

© Science Alert. All Rights Reserved

Search SciAlert website





Search

Pakistan Journal of Nutrition

Year: 2016 | Volume: 15 | Issue: 1 | Page No.: 40-44

DOI: [10.3923/pjn.2016.40.44](https://doi.org/10.3923/pjn.2016.40.44)

Effect of Vitamin A, Zinc and Vitamin E Supplementation on Immune Response in Seropositive Leprosy Subjects

M. Zen Rahfiludin, Adriyan Pramono and Onny Setiani

Abstract: The **immune response** plays an important role in leprosy prevention. Here we analyzed the effect of **vitamin A**, zinc and vitamin E supplementation on the **immune response** in seropositive leprosy patients by measuring serum levels of retinol, zinc, α -tocopherol, interferon gamma (IFN- γ) and interleukin-2 (IL-2). Subjects were randomly divided into either the treatment or control group. The treatment group received high dose **vitamin A** once and a daily dose of Zn and vitamin E supplementation for 45 days, while the control group received pills that were identical in appearance but lacked supplements. Supplement consumption compliance was recorded weekly. After 45 days of supplementation, IFN- γ and IL-2 levels were measured again. Upon study initiation both groups had normal retinol, zinc and α -tocopherol serum levels. After 45 days, serum levels of retinol and α -tocopherol increased only in the supplementation group ($p = 0.046$ and $p = 0.033$, respectively), while zinc serum levels decreased in both the supplementation ($p = 0.001$) and placebo ($p = 0.000$) groups. IFN- γ levels decreased slightly in the supplementation group, although the change was not significant ($p = 0.098$). Meanwhile, IFN- γ levels in the control group decreased significantly ($p = 0.022$). IL-2 levels decreased slightly in both the supplementation and placebo groups, but the changes were not significant ($p = 0.421$ and $p = 0.556$, respectively). Together our results indicate that supplementation with zinc and vitamins A and E could be a useful alternative therapy for maintaining **immune response** of seropositive leprosy patients.



How to cite this article:

M. Zen Rahfiludin, Adriyan Pramono and Onny Setiani, 2016. Effect of Vitamin A, Zinc and Vitamin E Supplementation on Immune Response in Seropositive Leprosy Subjects. *Pakistan Journal of Nutrition*, 15: 40-44.

DOI: [10.3923/pjn.2016.40.44](https://doi.org/10.3923/pjn.2016.40.44)URL: <https://sialert.net/abstract/?doi=pjn.2016.40.44>

Navigation

- [Online First](#)
- [Current Issue](#)
- [Previous Issues](#)
- [Editorial Board](#)
- [Submit a Manuscript](#)
- [Guide to Authors](#)
- [Subscribe to E-alerts](#)

Indexed In

- [ASCI-Database](#)
- [Asian Digital Library](#)
- [Cambridge Scientific Abstract](#)
- [Chemical Abstract Services](#)
- [SCIMAGO](#)

Like 68K Share

Follow @sialert 562 followers



Pakistan Journal of Nutrition

Publisher: Asian Network for Scientific Information

eISSN: 1994-7984
pISSN: 1680-5194

Pakistan Journal of Nutrition is a leading international peer-reviewed journal covering research on human and clinical nutrition, animal nutrition and basic science as applied to nutrition. The Journal recognizes the multidisciplinary nature of nutritional science and includes material from all of the specialties involved in nutrition research, including molecular and cell biology and the emerging area of nutritional genomics.

Submit your best paper to PJN via [online submission system](#).Editor-in-Chief: [Reema Fayez Tayyem](#)

Editor-in-Chief



Reema Fayez Tayyem
The Hashemite University, Jordan

REGIONAL EDITORS



**Youssef Abd Elwahab Youssef
Mohammed Attia**
King Abdulaziz University, Saudi Arabia



**Mohamed Fawzy Ramadan
Hassanien**
Zagazig University, Egypt

ASSOCIATE EDITORS



**Ammar Mohammed Hamood AL-
Farga**
King Abdulaziz University



Gulzar Ahmad Nayik
Sant Longowal Institute of Engineering
and Technology, India



Tugay Ayasan
East Mediterranean Agricultural
Research Institute, Turkey

Navigation

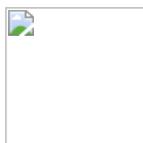
- [Online First](#)
- [Current Issue](#)
- [Previous Issues](#)
- [Editorial Board](#)
- [Submit a Manuscript](#)
- [Guide to Authors](#)
- [Article Processing Charges](#)
- [Subscribe to E-alerts](#)



Indexed In

- [ASCI-Database](#)
- [Asian Digital Library](#)
- [Cambridge Scientific Abstract](#)
- [Chemical Abstract Services](#)
- [SCIMAGO](#)

TECHNICAL EDITORS



Sheikh Adil Hamid

Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, India



Ahsan Akram

University of Agriculture, Faisalabad



Anil Panghal

Lovely Professional University, India



Emad Ali Soliman Ali

Advanced Technology and New Materials Research Institute, Egypt



Faiyaz Ahmed

Qassim University, Saudi Arabia



Firas Sultan Ibrahim Al-Azzeh

Umm Al-Qura University, Saudi Arabia



Huisuo Huang

Roha Ltd, USA



Manal Abdel Rahman Ali Sorour

Agricultural Research Center, Cairo University, Egypt



Mohammed K. Al-Khusaibi

Sultan Qaboos University



Mohammadabadi Mohammadreza

Shahid Bahonar University of Kerman



Nermin Berik

Canakkale Onsekiz Mart University, Turkey



Rasha I. Qudsieh

North Carolina State University



Mostafa Ibrahim-Ahmed Waly

Sultan Qaboos University, Oman

[Home](#) · [Journals](#) · [For Authors](#) · [For Subscribers](#) · [ASCI](#)

© Science Alert. All Rights Reserved

Search SciAlert website

