Serving best practice in patient care

Improve your brain power

with hovid DHA Emulsion

- Proper brain development
- Improved learning ability
- Improved memory

Daily Intake Recommended by National Institute of Health (NIH) Maryland, U.S.A.
Contents

EDITORIAL
Know your Rights 4

COVER
Evolving Best Practice in Patient Care 6-16

PSN
86th Annual National Conference 17-20

WAPCP
26th Annual General Meeting 21-22

CONTINUING EDUCATION
Pharmaceutical Care in Nigeria 23-34

ORIGINAL RESEARCH
Potential Dangers of Administering Undiscarded Paracetamol Syrup 35-39

CONTINUING EDUCATION
General Counselling Psychotherapy 42-50

SHORT COMMUNICATION
Relationship between Serum retinol concentrations with severity of Malaria 51-54.

Selective Antibacterial activity of Mansonia altissima and Gosewielerodentron balsamiferum wood ash extracts 55-59

PHOTOS SPLASH
60-61

ORIGINAL RESEARCH
A study of the Drug Holding Pattern among female students in a Nigerian University 62-68

HEALTHY LIVING
Water and your health 69-70

VIEW POINT
The young shall grow 71

UPCOMING EVENTS
72

AUTHOR GUIDELINES
Nigerian Journal of Pharmacy 73-74
Editorial Policies:
The Nigerian Journal of Pharmacy (ISSN 0331 670X) is published quarterly for the Pharmaceutical Society of Nigeria/Pharmacists. It is a refereed journal designed to meet the continuing educational needs of pharmacists and related disciplines in Nigeria, Africa and the international medical communities.

Aims
To promote pharmacy practice research for the advancement of pharmacy profession.
To enhance the competencies of practicing pharmacists.
To provide an international forum for the communication and evaluation of data, methods and opinions in pharmacy practice and related disciplines.

Editorial Policy
The Nigerian Journal of Pharmacy is a publication of the Pharmaceutical Society of Nigeria.

The Nigerian Journal of Pharmacy considers all manuscripts on the condition that they have not been previously published, nor are they submitted for consideration for publication or in press elsewhere. The Nigerian Journal of Pharmacy publishes original research papers, critical reviews, systematic reviews, personal views and short communications in the following areas:
- Pharmaceutical Sciences:
- Pharmaceutics and Pharmaceutical Technology, Pharmacology and Toxicology, Pharmaceutical/Medicinal Chemistry and Analysis, Pharmacognosy, and Pharmaceutical Microbiology.
- Clinical Pharmacy, Pharmaceutical Care, Medicines Management, Pharmacoeconomics, Pharmacy Management and Public Health Pharmacy.
- Other aspects of Pharmacy Practice such as Hospital, Community.

Industrial, Social and Administrative Pharmacy Biomedical and related disciplines

Manuscript Submission
Send the manuscript as an e-mail attachment to us: pharmacyjournal@yahoo.com and include the journal name and "Article Submission" in the subject line.

Correspondence should be directed to:
The Editor-in-Chief
Nigerian Journal of Pharmacy
Pharmacy House
32, Faramobi Ajike Street, Anthony Village
P.O. Box 531, Mushin Lagos.
Nigeria
www.psnnational.org
E-mail: pharmacyjournal@yahoo.com
Phone: +2348023519433

Manuscript Preparation
The maximum length of manuscripts should be 6000 words (24 double-spaced typewritten pages) for review, 3000 words (18 pages) for research articles, 1500 (6 pages) for technical notes, commentaries and short communications.

Manuscript Format
The preferred format of all manuscript is MS Word (Font type: Calibri, Font size: 11). Illustrations (figures) and images must be inserted in the manuscript at the position they should appear when published.

Manuscript Style
The Language of the journal is English. Each manuscript should be typed double-spaced on A4 (8.5" x 11") paper size with 1 inch margins. It should be arranged in the following order: Title, Abstract, Keywords (3 to 5), Introduction, Materials and Methods (Methods for Operational Research), Results, Discussion, Conclusion, Acknowledgement, and References.

First page of manuscript
This should include the title of the article, authors' names (First name, middle initial and then the last name of each author) and their affiliations. The corresponding author must provide the full corresponding address (including telephone and e-mail address) at the bottom of the page.

Second page of manuscript
The Abstract (no more than 350 words) should be presented in the second page along with title and keywords. The abstract should be structured into: Background, Methods, Results, and Conclusion.

Introduction
An introduction should provide a background to the study (appropriate for an international audience). Related literature based on the objectives of the study should be indicated, and clearly state the specific objectives of the study at the end of this section. Please ensure that any abbreviations and all symbols used in equations are fully defined. Approximate length: 500-1000 words.

Materials and Methods
This section should describe the
materials and methods used in sufficient detail to allow the study to be replicated. Please include details of ethical approval in this section. Methods of data analysis including the appropriate statistical analysis performed should be provided. Approximate length: 500-1000 words.

Results

This section should first summarize all the results in text before referring to tables and figures for details. Please limit the number of tables and figures. It is essential to include statistical analyses or other indicators to enable assessment of the variance of replicates of the experiments. Data should not be repeated in figures and tables. Approximate length: 1000-1500 words.

Discussion

The discussion section should summarize the main findings, interpret the findings and compare with previous studies, as well as the contribution made to the field. Indicate unanswered questions/provide direction for future research. This should be followed by a critique of the strengths and limitations of the research including any policy implications. Approximate length: 1000 words.

Conclusions

A brief conclusions section should summarize the salient findings of the study based on the study objectives. Authors are strongly advised to emphasize the contribution made to the field by their study in this section. Approximate length: 200 words.

References

References should be typed single-spaced and numbered consecutively in the order in which they are cited in the text. Full names of all the authors should be indicated. Arabic numerals (superscript), e.g., (1, 1.3, 5 or 1-4) should be used in citing references in the text. Index Medicus Style, or abbreviations should be used for journals cited. For correct abbreviations visit http://www.ncbi.nlm.nih.gov/PubMed/jbrowser.html.

Unpublished work should not be included in the list of references. Examples


Tables

These should be numbered with Arabic numerals. Each table should be typed using a table format (i.e., each variable must be typed into a separate cell in the table) with only horizontal lines above and below the table column headers and at the bottom of the table (using 1 pt for the top and bottom lines and ½ pt for any middle line). No vertical lines should be included in any table. Each table MUST not exceed 6.5 x 7.8 cm; width x height) and MUST be inserted at the appropriate position in the text just below where it was referred to the first time. The title should be typed at the top of the table in the sentence case format, i.e., only the first name should be in capital letters; names should also be in capital letters, as appropriate. Any legend should be typed at the top and bottom of the table in italics.

Illustrations

Figures should be professionally drawn electronically and inserted in the appropriate position where it was first cited within the text. If photographs of patients are used, either the subjects are not identifiable or their pictures must be accompanied by a written permission to use the images. Photographs must be clear and sharp. Labels of Figures MUST be in text format and MUST not form part of the image.

Copyright

It is a condition of publication that authors grant the Pharmaceutical Society of Nigeria the exclusive license to publish all articles, including abstracts. Authors retain copyright of their work, which means they may re-use their work for non-commercial purposes without asking permission of the publisher. Authors are themselves responsible for obtaining permission to reproduce copyright material from other sources.

Ethical Matters

Authors using experimental animals and human subjects in their investigation must seek approval from the appropriate Ethical Committee in accordance with "Principles of Laboratory Animal Care" (NIH publication no. 85-23, revised 1985) and/or the Declaration of Helsinki promulgated in 1964 as amended in 1996. The Methods section must include a statement to prove that the investigation was approved and that informed consent was obtained.

Galley Proofs

Unless indicated otherwise, galley proofs are sent to the address given for correspondence. It is the responsibility of the corresponding author to ensure that the galley proofs are returned without delay.
Relationship between serum retinol concentrations with severity of malaria

Sunday O. Olayemi,
Ibrahim A. Orogbo,
Edamisan O. Temiye,
Ephraim Nnwoye
Abdullahi A. Adeyemi
Peter D. Ojobor
Department of Pharmacology,
Therapeutics and Toxicology,
Department of Pediatrics,
Department of Biomedical Engineering,
Department of Physiology,
Central Research Laboratory,
College of Medicine,
University of Lagos, Ile-Ife, Osun, Nigeria

ABSTRACT

Introduction: The effect of vitamin A supplementation in the reduction of childhood mortality has been known for some time however the more specific effect on malaria morbidity and mortality are less well documented. The objective of this study was to correlate serum retinol concentrations with severity of malaria using High Performance Liquid Chromatography.

Method: Venous blood sample was taken for assay of baseline plasma retinol, packed cell volume and malaria parasite count. Patients between the ages of one and fifteen years with various severity of malaria ranging from moderate to severe malaria were selected to participate in the study.

Result: Of 147 samples analysed, mean retinol levels did not correlate with parasite density but it correlated with the packed cell volume for all children with confirmed malaria parasite in their blood ($r=0.7469; CI=0.65-0.82; p=0.0001$).

Conclusion: Mean retinol levels did not correlate significantly with parasite density but there is a positive correlation between serum retinol and the packed cell volume

Keywords: Retinol, Malaria, serum concentrations

INTRODUCTION

The annual incidence of malaria is about 300-500 million cases, causing between 1.5 and 2.7 million deaths. Tropical Africa accounts for 90% of the morbidity and mortality attributed to malaria; severe disease and death mainly occur among infants in remote rural areas. 1,3 Preventing poverty, lack of functioning health services, climatic and environmental change, and the rapid spread of chloroquine resistance contribute to a deteriorating malaria situation in Africa. 12 Few human studies have addressed the role of micronutrients in malaria. Vitamin C has been studied in animals with promise of prophylactic effect against malaria in humans. Other reports suggest that persons with lower plasma vitamin E levels recover more quickly from clinical malaria. A placebo-controlled trial of zinc supplementation of pre-school children provides evidence for the role of zinc in malaria. 4-7 The effect of vitamin A supplementation in the reduction of childhood mortality has been known for some time however the more specific effect on malaria morbidity and mortality are less well documented. Reduced serum retinol concentrations are found in patients with malaria 1,11,12 and have been associated with an increased parasite burden and clinical severity. 10 Although one study did not
show retinol to be effective against *Plasmodium falciparum* in vitro, others found intrinsic anti-Plasmodium activity at retinol concentrations that were close to those in normal human serum (1–3dM) (10,11) and higher 3-10M. A recent study had gone further to characterize these effects in vitro. We also confirmed this in an in vivo study.

The objective of this study was to correlate serum retinol concentrations with severity of malaria using High Performance Liquid Chromatography.

### METHODS

Two hundred and fifty consecutive patients between the ages of one and fifteen years with various severity of malaria ranging from moderate to severe malaria were selected to participate in the study. Inclusion criteria was fever (body temperature > 37.5°C), with positive blood smear for *P. falciparum* asexual parasites. Exclusion criteria included children recently immunized with vitamin A substitute and those on vitamin A supplementation. Healthy (non-febrile) children (n = 50) matched for age and sex ratio served as control. They were selected from those attending the routine immunization clinics etc.

Laboratory Investigation

On the day of enrollment, a venous blood sample was taken for assay of baseline plasma retinol, packed cell volume and malaria parasite count.

The presence of malaria parasites in peripheral blood was assessed using thick and thin blood smears stained with Giemsa. A trained laboratory technician carried out independent readings of each blood smear in three different fields of the slide. Parasite density per microlitre of blood was estimated from the number of parasites per high-power field (HPF). One parasite per HPF was taken to indicate a malaria parasitaemia of approximately 500 per μl.

For vitamin A assay, the collected blood was protected from light and centrifuged within 1 hour. Plasma was stored in light-proof tubes (plain plasma tubes wrapped in aluminium foil) and kept in the freezer (-20 °C) before assay. Retinol was measured in deproteinized, hexane-extracted sera using a modified High Performance Liquid Chromatography method of Sowell et al.

### RESULT

A total of 147 samples were analyzed for retinol. They were grouped based on the level of parasitaemia. Table 1 shows the age, sex and mid upper arm circumference for the children. The mean serum retinol level for the patient group with parasitaemia

<table>
<thead>
<tr>
<th>Variable</th>
<th>Patient</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Months)</td>
<td>50 (%)</td>
<td>50 (%)</td>
</tr>
<tr>
<td>0-20</td>
<td>29 (27.1)</td>
<td>11 (27.5)</td>
</tr>
<tr>
<td>21-40</td>
<td>40 (37.4)</td>
<td>14 (35.0)</td>
</tr>
<tr>
<td>41-6</td>
<td>18 (35.5)</td>
<td>15 (37.5)</td>
</tr>
<tr>
<td>Sex</td>
<td>82 (76.6)</td>
<td>30 (75.0)</td>
</tr>
<tr>
<td>Male</td>
<td>25 (23.4)</td>
<td>10 (25.0)</td>
</tr>
<tr>
<td>Female</td>
<td>18 (9.5)</td>
<td>6 (4.0)</td>
</tr>
<tr>
<td>MUAC (mm)</td>
<td>7 (6.5)</td>
<td>4 (10.0)</td>
</tr>
</tbody>
</table>
Table 2
Relationship Between Serum Retinol and Malaria Indices of Children Attending LUTH

<table>
<thead>
<tr>
<th>Variable</th>
<th>Study group</th>
<th>Control group*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parasite Density (*/µL)</td>
<td>5000</td>
<td>5000</td>
</tr>
<tr>
<td>Serum Retinol (µg/dl)</td>
<td>14.38±0.88</td>
<td>20.45±0.34</td>
</tr>
<tr>
<td>Packed Cell Volume (%)</td>
<td>27.41±0.57</td>
<td>31.01±0.42</td>
</tr>
</tbody>
</table>

Data expressed as mean±SEM  n=147  p<0.05

* Healthy non-febrile children although some had asymptomatic parasitaemia

**Figure 1** - Scatter Plot showing the relationship between Serum retinol concentration and Packed Cell Volume in young children attending the pediatric ward

**DISCUSSION**

From the study on serum retinol and malaria indices, 3% of the healthy children and 17% of the patient population had a serum retinol concentration below the severe deficient level of 10µg/dl. The WHO biochemical criterion for the diagnosis of vitamin A deficiency of public health significance is that 5% or more of the population at risk should have serum vitamin A levels below 10µg/dl. Although the sample size was small when compared to national prevalence studies, the prevalence of severe vitamin A deficiency of the healthy population in this study was similar to the one obtained from a previous national prevalence study. The depressed serum retinol concentration in the patient population compared to the healthy controls is in agreement with previous studies. However, regression analysis showed no significant correlation between serum retinol and parasitaemia.

The study by Sturchler and colleagues showed a negative correlation between retinol levels and malaria parasitaemia but confounding by age could not be ruled out since retinol concentration increases with age in children. This study however did not confirm this. Thurnham and Singkamani, although making use of adults reported that the lower concentrations of retinal in their patient population was due to the acute phase response, a phenomenon, associated with retinal binding protein and transthyretin in the circulation, by which the body reacts to infection and trauma, helping to prepare conditions for reparative process and wound healing. But the authors nonetheless suggested that there may be clinical advantages to retinol supplementation in malaria. The positive correlation between serum retinol and the packed cell volume shown in this study agrees with earlier studies and emphasizes the role played by retinol, a cellular antioxidant in maintaining erythrocyte integrity as it combats oxidative stress.

**CONCLUSION:** Mean retinol levels did not correlate significantly with parasite density but there is a positive correlation between serum retinol and the packed cell volume.
REFERENCES


