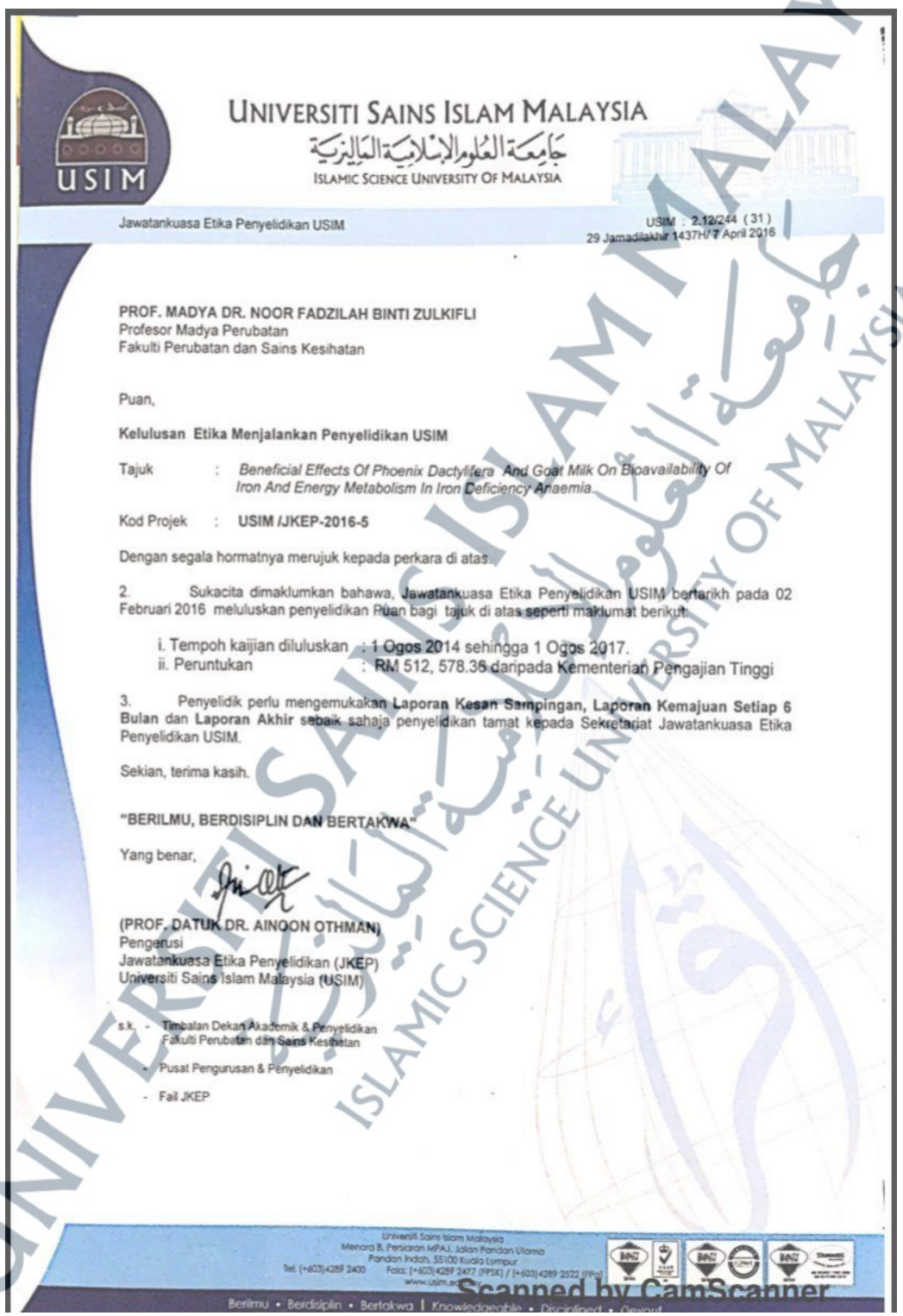
APPENDICES

Appendix 1 Ethical Approval



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جَامِعَة العُلوم الإسْلامِيَة المَالِيزِيَة
ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

Jawatankuasa Etika Penyelidikan USIM

USIM : 2.12/244 (31)
29 Jamadilakhir 1437H/ 7 April 2016

PROF. MADYA DR. NOOR FADZILAH BINTI ZULKIFLI
Profesor Madya Perubatan
Fakulti Perubatan dan Sains Kesihatan

Puan,

Kelulusan Etika Menjalankan Penyelidikan USIM

Tajuk : *Beneficial Effects Of Phoenix Dactylifera And Goat Milk On Bioavailability Of Iron And Energy Metabolism In Iron Deficiency Anaemia*

Kod Projek : **USIM /JKEP-2016-5**

Dengan segala hormatnya merujuk kepada perkara di atas.

2. Sukacita dimaklumkan bahawa, Jawatankuasa Etika Penyelidikan USIM bertarikh pada 02 Februari 2016 meluluskan penyelidikan Puan bagi tajuk di atas seperti maklumat berikut:

i. Tempoh kajian diluluskan : 1 Ogos 2014 sehingga 1 Ogos 2017.
ii. Peruntukan : RM 512, 578.35 daripada Kementerian Pengajian Tinggi

3. Penyelidik perlu mengemukakan **Laporan Kesan Sampingan, Laporan Kemajuan Setiap 6 Bulan** dan **Laporan Akhir** sebaik sahaja penyelidikan tamat kepada Sekretariat Jawatankuasa Etika Penyelidikan USIM.

Sekian, terima kasih.

"BERILMU, BERDISIPLIN DAN BERTAKWA"

Yang benar,

(PROF. DATUK DR. AINOON OTHMAN)
Pengerusi
Jawatankuasa Etika Penyelidikan (JKEP)
Universiti Sains Islam Malaysia (USIM)

s.k. - Timbalan Dekan Akademik & Penyelidikan
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Appendix 2 Informed consent

INFORMED CONSENT

I hereby declared that I have read the above patient's information sheet for the study entitled: **Beneficial Effects of *Phoenix Dactylifera* and Goat Milk on Bioavailability of Iron and Energy Metabolism in Iron Deficiency Anaemia.** I have been adequately informed about the purpose, set-up, course and risk of the study. At any time during and after my participation to the study, I am aware that the investigator is responsible for providing me any additional information about the study as well as in case of study related injury.

I agree to participate in the study. I accept that the research data from the present clinical investigation will be handed over confidentially by the investigating center, to personnel involved in the study and to the Health and Regulatory Authorities. I am aware that I can withdraw from the study at any time with no negative consequences. I may at any time exercise my rights with the investigator to access these files according to the law and to correct them.

My name or any material identifying me as a study participant will not be released without my written permission except in case as such the law requires releases. I declare that I have truthfully answered all questions about my medical past and that I will follow all rules and regulations imposed upon me by the research staff and listed on the patient's information sheet.

After signing, I will receive a copy of this written informed consent.

.....	.....	.....
Name of subject: NRIC:	Signature	Date
.....	.....	.....
Name of researcher/representative: NRIC:	Signature	Date
.....	.....	.....
Name of witness: NRIC:	Signature	Date

KEBENARAN BERASASKAN PENGETAHUAN

Saya dengan ini mengakui bahawa saya telah membaca maklumat mengenai pesakit untuk kajian bertajuk: **Beneficial Effects of *Phoenix Dactylifera* and Goat Milk on Bioavailability of Iron and Energy Metabolism in Iron Deficiency Anaemia.** Saya telah dimaklumkan dengan sewajarnya tentang tujuan, aturan, tempoh dan risiko kajian. Saya sedar bahawa penyelidik bertanggungjawab untuk memberikan saya sebarang maklumat tambahan tentang kajian dan juga berkenaan sebarang kecederaan yang berkaitan dengan kajian.

Saya bersetuju untuk mengambil bahagian dalam kajian ini dan maklum bahawa data penyelidikan ini akan diserahkan secara sulit oleh pusat penyelidikan kepada kakitangan yang terlibat dalam kajian dan Pihak Penguasa Kesihatan dan Kawal Selia. Saya juga sedar bahawa saya boleh menarik diri daripada kajian pada bila-bila masa tanpa sebarang kesan negatif. Saya juga boleh pada bila-bila masa menggunakan hak saya untuk mendapatkan fail-fail ini daripada doktor menurut undang-undang dan memperbetulkannya.

Nama atau bahan yang berkaitan saya sebagai peserta kajian tidak akan didedahkan tanpa kelulusan bertulis dari saya kecuali dalam kes yang disyaratkan oleh undang-undang. Saya mengakui bahawa saya telah menjawab semua soalan tentang sejarah perubatan saya dengan jujur dan akan mematuhi semua syarat dan peraturan yang dikenakan ke atas saya oleh kakitangan penyelidikan yang disenaraikan secara lampiran untuk maklumat pesakit.

Selepas menurunkan tandatangan, saya akan menerima satu salinan borang kebenaran ini.

……	……	……
Nama pesakit: NRIC:	Tandatangan	Tarikh
……	……	……
Nama penyelidik/wakil: NRIC:	Tandatangan	Tarikh
……	……	……
Nama Saksi: NRIC:	Tandatangan	Tarikh

Appendix 3 Food Diary

Food Diary

Name :

Group : Control/ Date palm/ Goat Milk/ Date palm &Goat Milk/ Iron tablet

Week: _____

Day	Date	Quantity
Mon		
Tues		
Wed		
Thurs		
Friday		
Sat		
Sun		

Time		Food taken & quantity
Breakfast		
Lunch		
Dinner		
Others (please specify)		

Appendix 4 Publication

CURRENT TOPICS IN NUTRACEUTICAL RESEARCH Vol. 16, No.4, pp. 245-252, 2018
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Review Article

BENEFICIAL EFFECTS OF DATE PALM (*PHOENIX DACTYLIFERA*) IN IRON DEFICIENCY ANAEMIA: A SYSTEMATIC REVIEW

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[Received November 16, 2017; Accepted November 3, 2018]

[Communicated by Prof. Chandan Prasad]

ABSTRACT: *Iron deficiency anaemia (IDA) is a global health problem. It is an indicator of poor nutrition and poor health. Based on the Al-Quran and prophetic Sunnah, dates are mentioned as a superfood that helps in the preservation of health. Therefore, we are evaluating the potential of using dates as a treatment for IDA from data published in various reports. The search was conducted for relevant articles published in four electronic indexed databases namely Medline, Ovid, Scopus, Biomed Central, and PubMed. Bibliographies of the screened studies and relevant reviews and manuscripts were also searched using Google scholar. The data reported involved systematic reviews and reports of studies that are according to the PRISMA guidelines. There were only three articles that discussed the effects of the use of dates in IDA. A significant increase was shown ($p<0.05$) in haematological parameters such as haemoglobin level, red blood cell count, packed cell volume and platelet count while no effect was shown on total white blood cell count, differential white blood cell and bone marrow ($p>0.05$). This systematic review identified limited reports that reported on the beneficial effects of dates in reducing IDA. There are several gaps in the available evidence, hence, further studies are needed to provide a comprehensive understanding on this matter.*

KEYWORDS: Anaemia, Date palm, Haemoglobin, Phoenix dactylifera, Systematic review

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INTRODUCTION

Anaemia is a pathological condition in which the haemoglobin concentration in red blood cell is abnormally low. Iron Deficiency Anaemia (IDA) is the most common cause of anaemia in the world (Alfe'rez et al., 2006). It is characterised by the reduction or absence of iron stores, low serum iron concentration, poor haemoglobin concentration, haematocrit reduction and increased platelet count. It commonly affects pregnant women, pre-school and school-age children, infants with low birth weight and women of childbearing age (WHO, 2008). IDA is a major public health problem affecting both developing and developed countries (Viteri, 1993; Pourghassem et al., 2000) including Malaysia (Tee et al., 1999). In Malaysia, a moderately high prevalence of anaemia has been reported amongst the vulnerable group (Foo et al., 2004). The prevalence of IDA among urban Malaysian women is 10.3%, and marked differences were found among the ethnic groups with higher prevalence of IDA among the Indians (Loh and Khor, 2010). It appears that the main reason for the poor iron status is the inadequate intake and poor bioavailability of dietary iron as well as poor intake of other nutrients (Foo et al., 2004). IDA affects children development and growth, lowers resistance to infections and is also associated with mortality of infants younger than 2 years. Grantham-McGregor and Ani (2001) also reported that IDA affects fertility, as well as mortality in

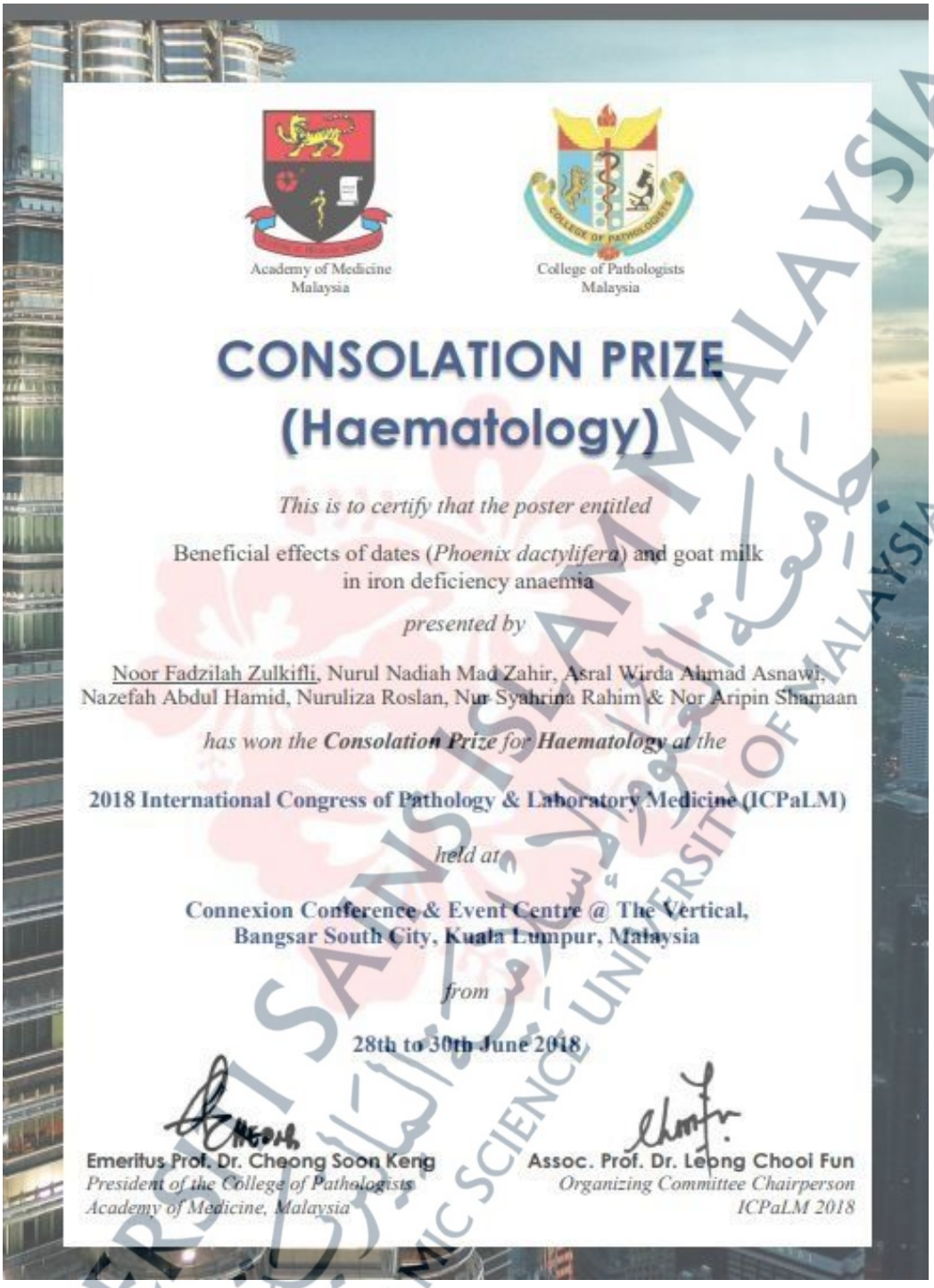
A Systematic Review on the Beneficial Effects of Goat Milk on Iron Deficiency Anaemia

Authors: Zahir, Nurul Nadiah Mad; Zulkifli, Noor Fadzilah; Hamid, Nazefah Abdul; Shamaan, Nor Aripin; Asnawi, Asral Wirda Ahmad; Rahim, Nur Syahrina; Rahman, Tanty Shahrumi Abdul; Aripin, Khairun Nain Nor

Source: Advanced Science Letters, Volume 23, Number 5, May 2017, pp. 4824-4830(7)
Publisher: American Scientific Publishers
DOI: https://doi.org/10.1166/asl.2017.8918

Abstract | References | Citations | Supplementary Data | Suggestions

Background: Iron deficiency anaemia is one of the most prevalent nutritional deficiencies in the world which indicates poor nutrition and health. It is characterized by the reduction or absence of serum iron as well as iron stores in the body. Supplementation of calcium rich diet such as animals' milk is known to have inhibitory effect on iron bioavailability. However, recent studies have found that goat's milk does not only increase iron bioavailability in iron deficiency anaemia but also minimized the interference of iron absorption. This systematic review aims to evaluate the potential of goat's milk as a treatment for iron deficiency anaemia. *Methods*: The search was conducted for relevant articles published in four electronic indexed databases namely Medline, Ovid, Scopus, and PubMed. Relevant reviews, manuscripts and bibliographies of screened studies were searched using Google search engine. Data reporting involved systematic reviews and report of the study according to PRISMA guidelines. *Results*: A total of eight articles were found to meet the inclusion criteria. It was reported that iron deficient rats treated with goat's milk showed increased hemoglobin regeneration efficiencies. This was evidenced by increased serum haemoglobin, red blood cell count, packed cell volume, haematocrit and mean cell volume. The DMT-1 receptor in the small intestine was also up-regulated indicating induction of erythropoiesis. These findings were more significant with whole goat's milk than skim powdered goat's milk. In iron deficient subjects treated with iron therapy, iron bioavailability was not affected with goat's milk supplementation whereas it was significantly low with cow's milk. The serum iron, ferritin, hepcidin levels as well as iron stores in liver, spleen and bone marrow were improved when treated with goat's milk. In normal rats, iron stores were reduced in the group treated with cow's milk and high calcium diet but not in the group supplemented with goat's milk and high calcium diet. *Conclusion*: This review identified several reports on the beneficial effect of goat milk in iron deficiency anaemia. The findings support



Academy of Medicine Malaysia

College of Pathologists Malaysia

CONSOLATION PRIZE (Haematology)

This is to certify that the poster entitled

Beneficial effects of dates (*Phoenix dactylifera*) and goat milk in iron deficiency anaemia

presented by

Noor Fadzilah Zulkifli, Nurul Nadiah Mad Zahir, Asral Wirda Ahmad Asnawi, Nazefah Abdul Hamid, Nuruliza Roslan, Nur Syahrina Rahim & Nor Aripin Shamaan

has won the ***Consolation Prize*** *for* ***Haematology*** *at the*

2018 International Congress of Pathology & Laboratory Medicine (ICPaLM)

held at

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ICPaLM 2018