



Difficulties in the Area



Morshed Kassouha

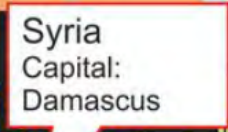
Assistant Lecturer, Ph.D student
D.V.M (parasitology), Fac. Vet. Med.,
Hama University





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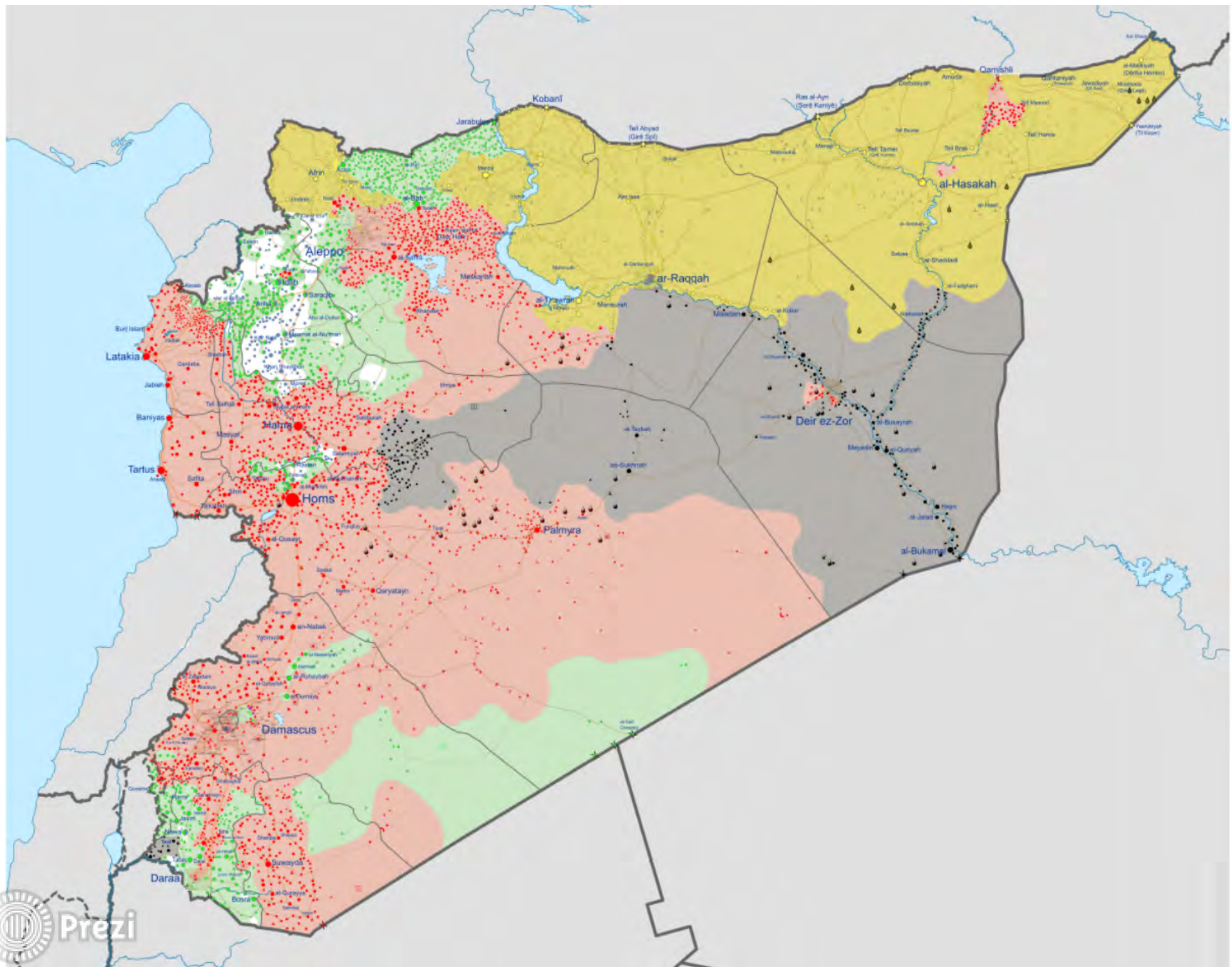


A map of the Middle East region. Syria is highlighted in pink. A white callout box with a red border points to Syria, containing the text 'Syria Capital: Damascus'. Surrounding countries are labeled in various colors: Turkey (purple), Iraq (light purple), Iran (light blue), Saudi Arabia (light orange), Jordan (light orange), Kuwait (light orange), United Arab Emirates (light orange), Oman (light orange), Afghanistan (light orange), Turkmenistan (light orange), Uzbekistan (light orange), Kazakhstan (light orange), Armenia (light orange), Azerbaijan (light orange), Georgia (light orange), Ukraine (light orange), Moldova (light orange), Romania (light orange), Bulgaria (light orange), Serbia (light orange), Albania (light orange), Greece (light orange), Cyprus (light orange), Israel (light orange), Egypt (light orange), Libya (light orange), Syria (pink), and Lebanon (light orange).

Syria
Capital:
Damascus

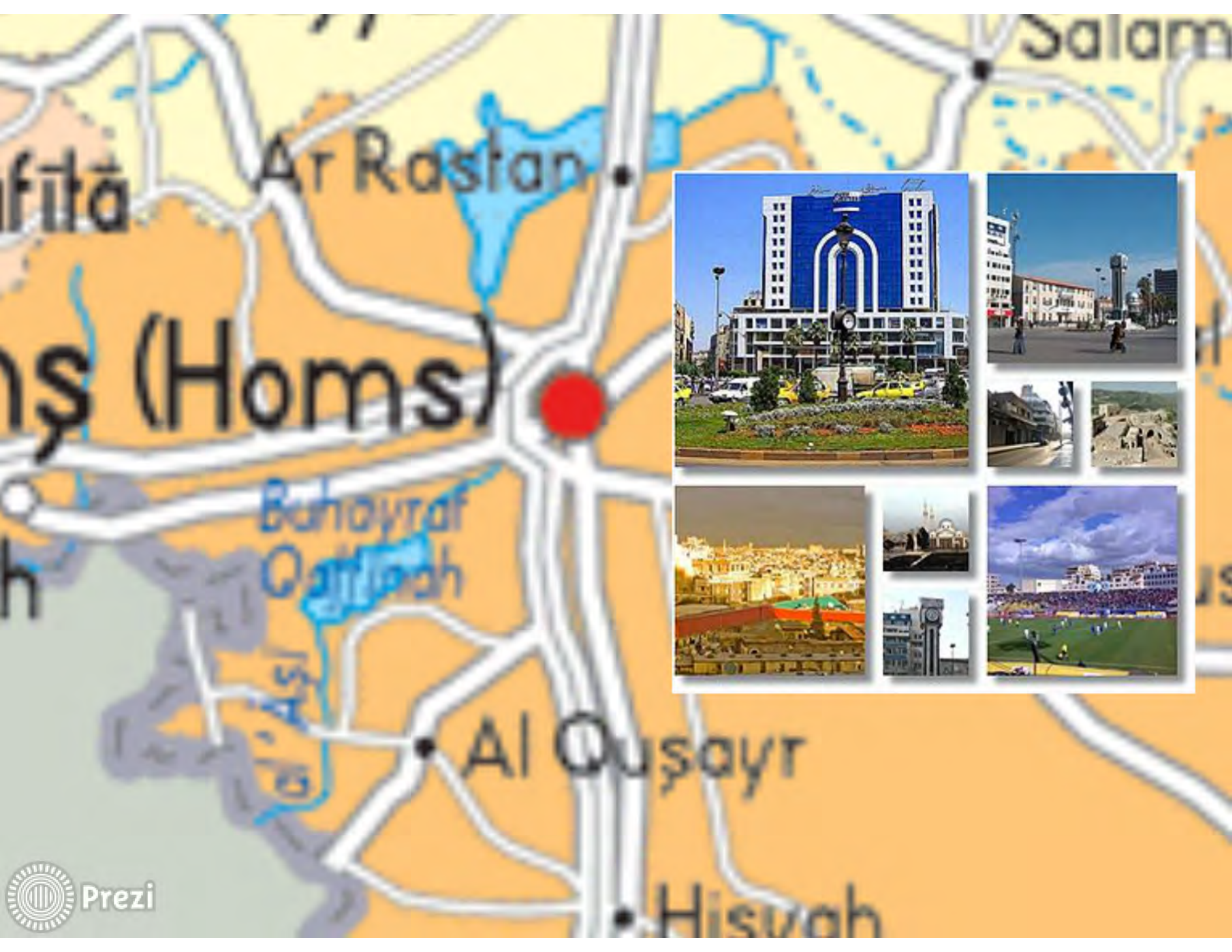






SYRIA
0 km 30 60 90 km
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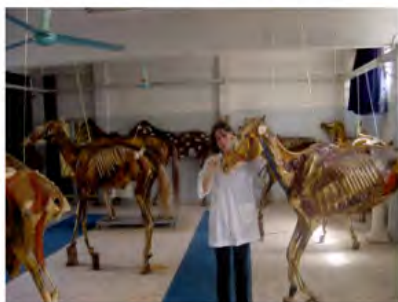
 **DIMASHQ**







Faculty of Veterinary Medicine



Researches

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Infectious Diseases
Poultry Diseases
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**Continuity in crisis
conditions ,
restoration work ,
materials for work**

**teaching
undergraduate
Students**

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Hama University



**WAR
Crisis**

Researches

Microbiology
Parasitology
Biochemistry
Internal Medicine
Surgery
Infectious Diseases
Poultry Diseases
Nutrition and Animal Husbandry
Health,.....etc.



teaching undergraduate Students

Vet. Med. and all Medical faculties in
Hama University





***Continuity in crisis
conditions ,
restoration work ,
materials for work***

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Buildings



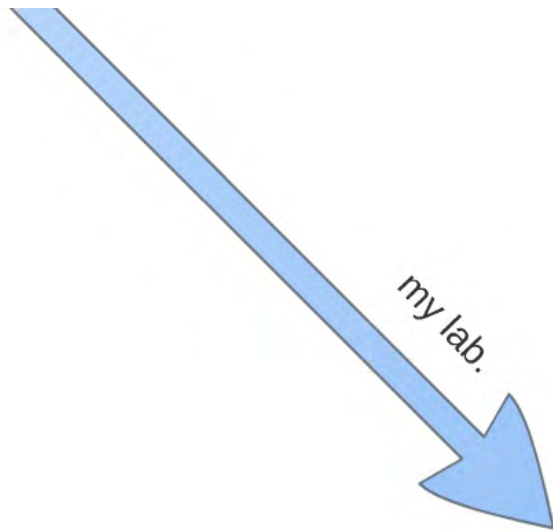


-find Staff - Trainning



Faculty of Veterinary Medicine





Departement of Microbiology Parasitology Lab.






LEBANON

B ā d i

DIMASHQ

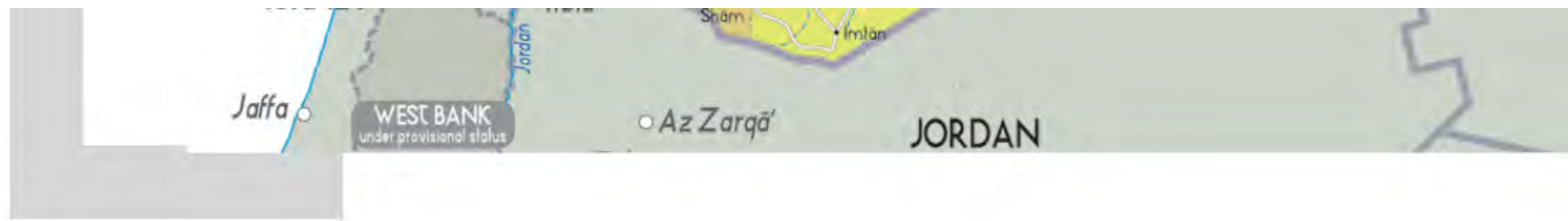
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 DIMASHQ (DAMASCUS)

AS AUWAYDĀ'

Shahbā'
As Suwaydā'

Prezi
Irhid



Damascus University- Faculty of sciences- Dep. of Biology- Immunology and Molecular biology Lab



Molecular biology Lab





Faculty of Veterinary Medicine Department of Microbiology

Vol XCIII, No. 311

Monday, July 23, 2017

\$1.25

Detection and Classification of Animal Parasites

Prevalence of Gastro-intestinal Helminthes of Cattle in Syria

That's presented by
Muhammad Adnan Karam
and **Dr. Hudaib Al-Sayid**
(Parasitology)

Under The Supervision Of
Dr. Mohamed Al-Sayid
Prof. of parasitology

2017

Helminthes and Protozoa

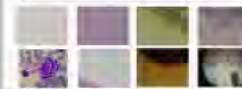
Prevalence of Gastro-intestinal Helminthes of Cattle in Syria

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2017

Diagnostic services for animal owners



Cryptosporidium



Question 1 ????????

Immunological



Microbiology



Detection and Classification of Animal Parasites

Helminthes and Protozoa

[illegible]

FIRST DETECTION OF *CRYPTOSPORIDIUM* SPP. IN
BROILER CHICKENS IN SERIA

Muhammad Khamis

Eurostat Eurostat - Statistics of the European Union

ABSTRACT

PDY also samples of these cases collected from broker firms (most brokers in Paris and Alsace provinces in 2006), which suffered from liquidity complementary problems at least for the first time. This study confirmed the situation of low broker stocks still Cryptosporidiosis in 2016 with a rate of 2.4%. This situation has been demonstrated by detecting the Cryptosporidiosis in 2016 in the final by using almost annual medical case notification surveillance system, this study by Korman and his colleagues.

The results of tests based on morphology and size of *Cryptosporidium* oocysts showed that the parasite is probably *C. baileyi* which stages between 0.1 and 0.5 μm .

This study showed a difference in the percentages of children according to the number in which Egyptian-numerals were first learned, in the French (Nile section) learned the concepts in 1-10 of all samples, while the direct onset method learned the concepts up to 70.



Prevalence of Hydatid cysts in Slaughtered Awassi Sheep
at Abotnira in Syria

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10

درآمد از صادرات کربن در ایران در سال ۱۳۹۵ بالغ بر ۱۰۰ میلیارد دلار بوده است. با توجه به اینکه ایران در سال ۱۳۹۵ حدود ۱۰۰ میلیون تن کربن صادر کرده است، این رقم به ازای هر تن کربن صادره معادل ۱۰۰۰ دلار بوده است. با توجه به اینکه ایران در سال ۱۳۹۵ حدود ۱۰۰ میلیون تن کربن صادر کرده است، این رقم به ازای هر تن کربن صادره معادل ۱۰۰۰ دلار بوده است.

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DOI: 10.1002/for

Original MSB (msb)

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[illegible]

من أهم النماذج التي تم تطويرها في مجال التعليم الإلكتروني هي نموذج التعليم الإلكتروني القائم على التعلم الإلكتروني، والذي يركز على استخدام التكنولوجيا لتقديم التعليم بشكل مرن وفعال. هذا النموذج يعتمد على استخدام المنصات التعليمية الإلكترونية لتقديم المحتوى التعليمي، والتي يمكن الوصول إليها في أي وقت ومن أي مكان. هذا النموذج يتيح للمتعلمين التعلم بشكل ذاتي، حيث يمكنهم تحديد وتوقيت وتقدمهم في التعلم. هذا النموذج يعتمد على استخدام التكنولوجيا لتقديم التعليم بشكل مرن وفعال. هذا النموذج يعتمد على استخدام التكنولوجيا لتقديم التعليم بشكل مرن وفعال.

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Syrian Arab Republic
Al-Baath University
Faculty of Veterinary Medicine
Department of Microbiology



Prevalence Of Gastro-Intestinal Helminthes of Camels In Syria

Thesis presented
By
Morshed Adnan Kassouha
post-Dipl.Vet.Med (D.V.M)
for
Master Degree In Vet. Med. Sci.
(parasitology)

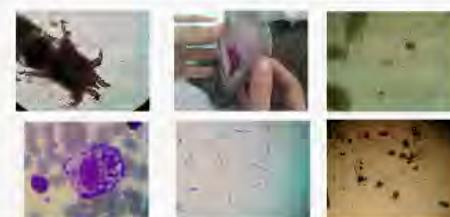
Under The Supervision Of

Prof. Abdulkarim Al-Khaled
Prof. of parasitology

Prof. Abdulrazzak El-moukdad
Prof. of parasitology

2011

Diagnostic services animal owners



Cryptosporid



Question 1 ????????

Helminthes and Protozoa

Syrian Arab Republic

Al-Baath University

Faculty of Veterinary Medicine

Department of Microbiology



Prevalence Of Gastro-Intestinal Helminthes of Camels In Syria

Thesis presented
By

Morshed Adnan Kassouha

post-Dipl. Vet. Med (D.V.M)

for

Master Degree In Vet. Med. Sci.

FIRST DETECTION OF *CRYPTOSPORIDIUM* SPP. IN BROILER CHICKENS IN SYRIA

Morshed Kassouha

Department of Microbiology, College of Veterinary Medicine,
University of Hama ,Hama, Syria.
(Received 17 December 2013 ,Accepted 29 december 2013)

Key words: *Cryptosporidium* - chicken - Syria .

ABSTRACT

Fifty nine samples of feces were collected from broiler flocks farms located in Hama and Aleppo provinces of Syria, which suffered from diarrhea or respiratory problem or both. For the first time, this study confirmed the infection of the broiler flocks with *Cryptosporidium* in Syria with a rate of 8.4%. The infection has been demonstrated by detecting the *Cryptosporidium* oocysts in the fecal by using direct smear method and Formol-Ether concentration method, then stained by Kinyoun acid fast stain.

The result of tests based on morphology and size of *Cryptosporidium* oocysts showed that the parasite is probably *C. baileyi* which ranged between (6 μ m X 4 μ m).

This study showed a difference in the percentages of infection according to the methods in which *Cryptosporidium* oocysts has been detected, as the Formol-Ether method detected the oocysts in 8.4% of all samples, while the direct smear method detected the oocysts in 6.7%.



انتشار الكيسات العنبرية عند الأغنام العواس المذبوحة في المسالخ الفنية في سورية

Prevalence of Hydatid cysts in Slaughtered Awassi Sheep at Abattoirs in Syria

عبد النعم الياسين⁽¹⁾ ، و عبدالحى كروالي⁽²⁾

مركز صحة حيوان - المركز العربي لدراسات المناطق الجافة والأراضي القاحلة (أكساد)، ص.ب. 2440، دمشق سورية، البريد الإلكتروني: a-yasin@acsad.org
مركز العربي للمناطق الجافة والأراضي القاحلة - دكتوراه في تغذية الحيوان.

المُلخَص

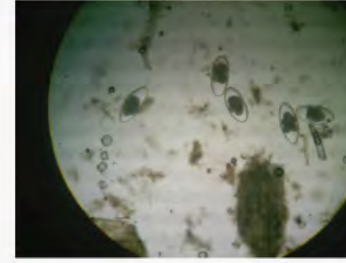
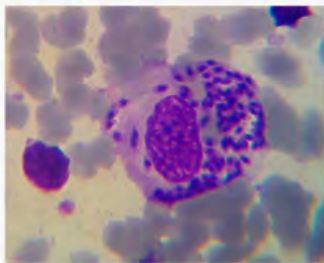
الكيسات العنبرية مرض طفيلي مشترك واسع الانتشار في العالم لاسيّما منطقة البحر الأبيض المتوسط. وتشكل الكيسات العنبرية الطور اليرقي خطورة للشوكة الحبيبية.

في إطار هذه الدراسة 6444 ذبيحة (3644 ≤ سنة و 2800 > سنة) بالمعينة البصرية والحسية والجس باليد وفتح الكيسات في كل من الكبد وحديد نوعها، في ثمانية مسالخ لثمانى محافظات بهدف تقدير انتشار الكيسات العنبرية في الأغنام السورية، ودراسة واقع المسالخ وعلاقتها في انتشار

نت النتائج أن نسبة الإصابة بالكيسات العنبرية في خراف الذبح التي يقل عمرها عن سنة بلغت 4.58 %، وهي أقل تكراراً وأهمية منها بالمقارنة مع النتائج في العمر، وكانت الكيسات صغيرة وأغلبها بحجم حبة العدس مما يجعل الإصابة خفيفة وليس لها أي تأثير على انتشار المرض. أما في المتقدم في العمر فقد بلغت نسبة الانتشار في جميع المحافظات المدروسة 49.2 %، واختلفت نسبها حسب مكان توضعها على الكبد والرئتين. كانت نسبة الكيسات النموذجية 15.96 % في الكبد فقط، و 21.04 % في الرئتين فقط، و 47.68 % في الكبد والرئتين معاً، في حين كانت في المتكلسة أو المتجنبة 2.97 % في الكبد فقط، و 1.60 % في الرئتين فقط، و 5.08 % في الرئتين والكبد، في حين كانت نسبة الكيسات في الكبد والمتكلسة أو المتجنبة في الرئتين 2.03 %، أما نسبة الكيسات النموذجية في الرئتين والمتكلسة أو المتجنبة في الكبد فبلغت 3.48 %.

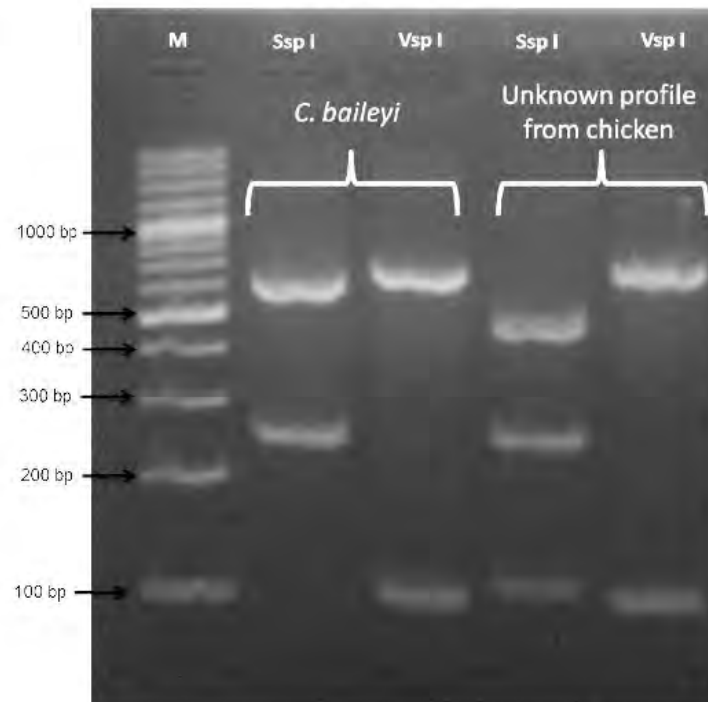
سبب الانتشار عالية في محافظات حلب وحمص ودمشق ثم ريف دمشق (62.2%، 62.0%، 61.9%، 52.0% على التوالي)، ومنخفضة نسبياً في حماة والرقدة والحسكة ثم دير الزور (39.2%، 37.7%، 36.6%، 35.2% على التوالي)، وتباينت نسب الانتشار بين المحافظات وكانت متنوعة إحصائياً بمستويات ثقة مختلفة.

Diagnostic services for animal owners



Prezi

Cryptosporidium





Evaluation of Hydatid Fluid Antigens for Detection of Antibodies of *Echinococcus* in Sheep Sera Using Indirect ELISA

Received 10 May 2016 / Accepted 14 July 2016

عبد الحميد الهاشمي¹، سعد (المجلة)²، عبود القويصر³، و محمد حسن الخزامي⁴

(٢) تم إقرار الميزانية العامة للدولة للعام المالي ١٤٣٥هـ بمبلغ إجمالي قدره ١٠٨٩٦٧٠٠٠٠٠٠٠ ريالاً، وذلك وفقاً للمادة (١٠) من قانون المالية العامة رقم ١٤٣٤هـ.

٢٧. مكتبة العلوم - جامعة دمشق - دمشق
٢٨. مكتبة الطب البيطري - جامعة دمشق - دمشق

فلمن

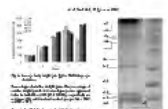
لقد وجدنا أن نسبة كبيرة من المشاركين في الدراسة استخدموا خدمات الرعاية الصحية في الماضي، حيث بلغت 74.6%، بينما استخدم 25.4% من المشاركين خدمات الرعاية الصحية في الحاضر. كما وجدنا أن نسبة كبيرة من المشاركين في الدراسة استخدموا خدمات الرعاية الصحية في الماضي، حيث بلغت 74.6%، بينما استخدم 25.4% من المشاركين خدمات الرعاية الصحية في الحاضر. كما وجدنا أن نسبة كبيرة من المشاركين في الدراسة استخدموا خدمات الرعاية الصحية في الماضي، حيث بلغت 74.6%، بينما استخدم 25.4% من المشاركين خدمات الرعاية الصحية في الحاضر.

Abstract

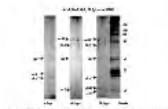
Hydatidosis is a dangerous zoonosis with worldwide distribution and causes heavy losses in sheep. Forty positive serum samples were collected from sheep infected with hydatidosis, and 24 serum samples from uninfected sheep, and additional 11 samples from sheep with *Cysticercus tenuicollis* were collected.

The Arab Journal for Arid Environments 5 (1): 55 - 61

51. 55-(1) 52808-0002

[illegible]

Research highlights: The two investigated diets (16:1 and 16:4) were found to be effective in reducing the plasma triglyceride levels in the subjects with hypertriglyceridemia. The 16:4 diet was found to be more effective than the 16:1 diet in reducing the plasma triglyceride levels. The 16:4 diet was also found to be more effective than the 16:1 diet in reducing the plasma triglyceride levels in the subjects with hypertriglyceridemia.



specific effect of β on levels of α in the presence of γ was tested by fitting the following model to the data:

$$Y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_k + \alpha\beta_{ij} + \alpha\gamma_{ik} + \beta\gamma_{jk} + \alpha\beta\gamma_{ijk} + \epsilon_{ijk}$$

where μ is the overall mean, α_i is the effect of the i th level of α , β_j is the effect of the j th level of β , γ_k is the effect of the k th level of γ , $\alpha\beta_{ij}$ is the effect of the ij th combination of α and β , $\alpha\gamma_{ik}$ is the effect of the ik th combination of α and γ , $\beta\gamma_{jk}$ is the effect of the jk th combination of β and γ , $\alpha\beta\gamma_{ijk}$ is the effect of the ijk th combination of α , β , and γ , and ϵ_{ijk} is the error term. The model was fitted to the data using the least squares method. The results of the analysis are shown in Table 2. The model was a good fit to the data ($R^2 = 0.98$). The effect of β on levels of α in the presence of γ was significant ($p < 0.05$). The effect of γ on levels of α in the presence of β was also significant ($p < 0.05$). The effect of α on levels of α in the presence of β and γ was not significant ($p > 0.05$). The effect of α on levels of α in the presence of γ was also not significant ($p > 0.05$). The effect of β on levels of α in the presence of γ was significant ($p < 0.05$). The effect of γ on levels of α in the presence of β was also significant ($p < 0.05$). The effect of α on levels of α in the presence of β and γ was not significant ($p > 0.05$). The effect of α on levels of α in the presence of γ was also not significant ($p > 0.05$).

Microbiology

Syrian Arab Republic
Al-Baath University
Faculty of Veterinary Medicine
Department of Microbiology



Isolation And Classification Of *Aspergillus* And
Study Of Histopathological Effects On Tissues In
Broiler Chicken

Thesis Presented by
Fouad Al-Damoud
M.Sc. Vet. Med. (D.V. M.) Microbiology

For
Doctorate Degree In Vet. Med. Sc
Microbiology

Under the supervision of

Assistant Prof. Dr.
Ahmad Hamdi Mokresh
Assistant supervision
Department Of Pathology

Assistant Prof. Dr.
Ibrahim Rifai
Scientific supervision
Department Of Microbiology

2011



Syrian Arab Republic
Al-Baath University
Faculty Of Veterinary Medicine
Department Of Microbiology



Bacteriological and molecular study of mycoplasma infections in chickens in Syria

Thesis Presented by

Hamid Ali Nagi ALREFAIE

Msc. Vet. Med. (D .V. M.) Microbiology

For

Doctorate Degree in Vet. Med. Sc.

Microbiology

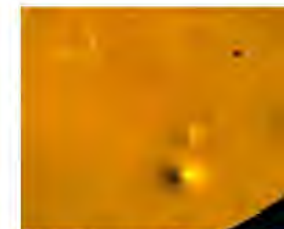
Under the supervision of

Prof. Dr. Samer kamel Ibrahim

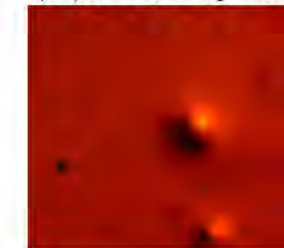
Scientific supervision

Dep. of Microbiology-vet. Med. faculty-ALbaath.Univ.

2014



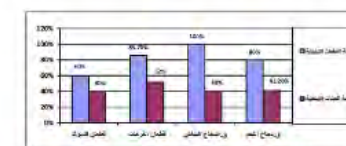
مطورات على وسط أغار المغطوطات (x60)



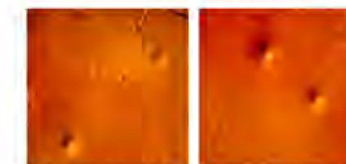
النتائج

جدول رقم (14) نتائج عزل المغطوطات من عينات المصلط بطور الفريسة

العدلات الإيجابية (عدد)	العدلات السالبة	العدلات الإيجابية (عدد)	العدلات السالبة	العدلات الإيجابية (عدد)	العدلات السالبة
100%	0	15	85%	5	15
100%	0	25	100%	0	25
100%	0	15	100%	0	15
100%	0	14	100%	0	14
100%	0	30	100%	0	30



المخطط البياني (14) نتائج عزل المغطوطات من عينات المصلط بطور الفريسة



صورة رقم (13) مثال مستعمرات المغطوطات المتحركة على وسط أغار المصلط من (عينات المصلط بطور الفريسة)

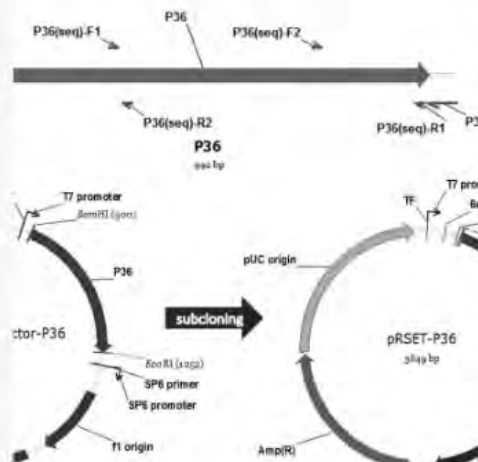
Damascus university- Faculty of sciences- Dep. of Animal Biology

Vol XCIII, No. 311

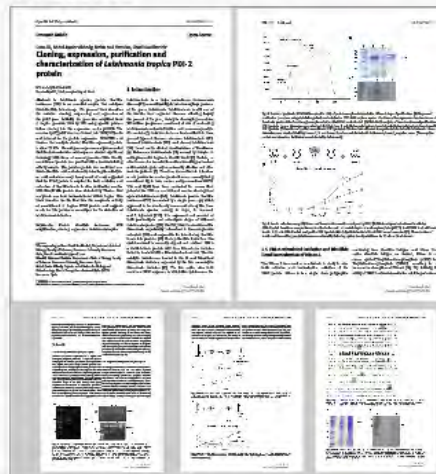
Monday, July 24, 2017

\$5.25

Headline 1



DNA Vaccines & Recombinant Proteins



Headline 2 Attenuated Vaccines



International Journal of PharmTech Research
CODEN: IJPTDH, ISSN: 1074-2818
Vol. 4, No. 4, pp. 581-591, 2017

Effect of inhibitor protein kinase A (PKA) on
Leishmania tropica promastigotes viability, infectious ability
and differentiation

Mohamed Anas Al-Muallim¹, Chadl Soukariyah, Mahmoud Kweider

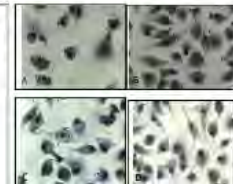
Headline 3 Oils and Plant Extracts for treatment



International Journal of PharmTech Research
CODEN: IJPTDH, ISSN: 1074-2818
Vol. 4, No. 4, pp. 581-591, 2017

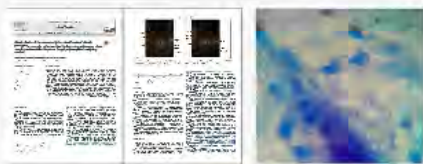
Effect of inhibitor protein kinase A (PKA) on
Leishmania tropica promastigotes viability, infectious ability
and differentiation

Mohamed Anas Al-Muallim¹, Chadl Soukariyah, Mahmoud Kweider

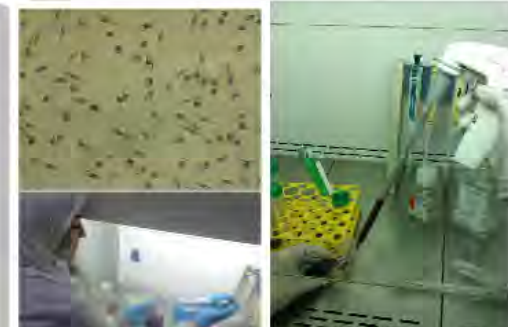
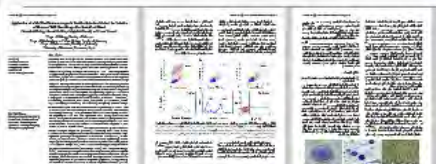


Question 2 How to control Leishmaniasis in Syria?

Giardia



Headline 4 Stem cells



DNA Vaccines & Recombinant Proteins

Open Life Sci. 2016; 11: 166–176

DE GRUYTER OPEN

Research Article

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Cloning, expression, purification and characterization of *Leishmania tropica* PDI-2 protein

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Abstract: In *Leishmania* species, protein disulfide isomerase (PDI) is an essential enzyme that catalyzes thiol-disulfide interchange. The present work describes the isolation, cloning, sequencing and expression of the *pdi-2* gene. Initially, the gene was amplified from *L. tropica* genomic DNA by PCR using specific primers before cloning into the expression vector pET-15b. The construct pET/*pdi-2* was transformed into BL21(DE3) cells and induced for the protein expression. SDS-PAGE and western blot analysis showed that the expressed protein is about 51 kDa. Cloned gene sequence analysis revealed that the deduced amino acid sequence showed significant homology with those of several parasites PDIs. Finally, recombinant protein was purified with a metal-chelating affinity column. The putative protein was confirmed as a thiol - disulfide oxidoreductase by detecting its activity in an oxidoreductase assay. Assay result of assay suggested that the PDI-2 protein is required for both oxidation and reduction of disulfide bonds *in vitro*. Antibodies reactive with this 51 kDa protein were detected by Western blot analysis in sera from human infected with *L. tropica*. This work describes for the first time the enzymatic activity of recombinant *L. tropica* PDI-2 protein and suggests a role for this protein as an antigen for the detection of leishmaniasis infection.

Key words: Protein disulfide isomerase, PCR amplification, cloning, expression, *Leishmania tropica*.

1 Introduction

Leishmaniasis is a major vector-borne zoonosis disease [1,2] caused by obligate intramacrophage protozoa of the genus *Leishmania*. Leishmaniasis is still one of the world's most neglected diseases, affecting largely the poorest of the poor, mainly in developing countries; 350 million people are considered at risk of contracting leishmaniasis, and some 2 million new cases occur yearly in 88 countries [3]. Leishmaniasis can be classified into three general types of disease: cutaneous leishmaniasis (CL), mucosal leishmaniasis (ML), and visceral leishmaniasis (VL), based on the clinical manifestations of the disease [4]. Cutaneous leishmaniasis (CL) caused by *L. major*, *L. aethiopica* and *L. tropica* in the Old World [5]. To date, no effective vaccine is available and treatment by pentavalent antimonial drugs is only occasionally effective and often toxic for patients [5]. Therefore, more efforts to introduce a new protein for vaccine production are currently being considered. Up to date, various antigens such as KMP11, TSA and Gp63 have been evaluated for assess their potential for DNA or recombinant vaccine development against leishmaniasis [6–8]. *Leishmania* protein disulfide isomerase (PDI) is encoded by a single gene copy which appeared to be structurally conserved among the three *Leishmania* species, namely, *L. major*, *L. donovani*, and *L. infantum* [9,10]. It is expressed and secreted at both promastigote and amastigote stages of different *Leishmania* species [9,11]. The PDI, which is a member of the thioredoxin superfamily, is localized in the endoplasmic reticulum (ER) and responsible for introducing disulfide bonds into proteins [12]. During disulfide formation, two

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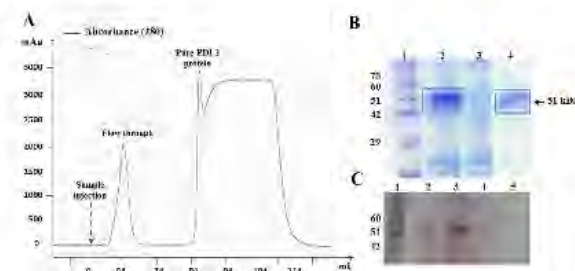


Fig. 5. Protein migration in SDS-PAGE (acrylamide 12%) of protein samples obtained after different steps of purification. (A) Diagram of purification procedure using nickel charged column installed on FPLC AKTA explorer system. Continuous line represents the absorbance of the eluate, peaks of the flow through sample and of purified PDI-2 are indicated. (B) SDS-PAGE analysis of the extraction and purification of PDI-2 protein. Lane 1- Molecular mass standard (in kDa); Lane 2- soluble bacterial extract; lane 3- insoluble bacterial extract; lane 4- purified PDI-2 protein. (C) Reaction of purified recombinant PDI-2 protein in Western blot with sera from patients infected with *Leishmania*. Lane- 1 Molecular mass standard (in kDa); Lanes: 2, 3, and 4- sera from human infected with *Leishmania*; Lane- 5 negative serum (The negative control was taken from individual never infected by *Leishmania*).

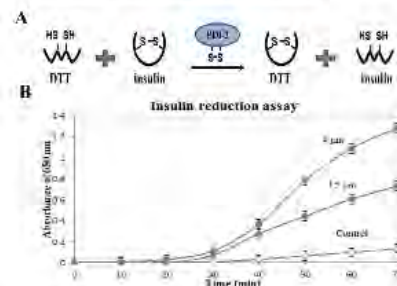


Fig. 6. Insulin reduction assay. (A) Scheme of the reduction reaction catalyzed by PDI-2 (B) PDI-2-catalyzed reduction of insulin by dithiothreitol. Reactions were performed in a final volume of 1 mL containing 0.1 M sodium phosphate (pH 7.0), 2 mM EDTA, 0.13 mM bovine insulin, 0.13 mM dithiothreitol, and purified PDI-2 protein (●). Only dithiothreitol without PDI-2 served as control (○). The reduction of insulin and its resulting precipitation were monitored by following optical density at 660 nm for 70 min at 60 s intervals.

Headline 2

Attenuated Vaccines



International Journal of PharmTech Research

CODEN (USA): IJPRIF, ISSN: 0974-4304

Vol.8, No.4, pp 595-601, 2015

**Effect of inhibitor protein kinase A (PKA) on
Leishmania tropica promastigotes viability, infectious ability
and differentiation**

Mohamed Anas AL Moalem*, Chadi Soukkarieh, Mahmoud Kweider

Headline 3



Prezi

Headline 3

Oils and Plant Extracts for treatment



International Journal of ChemTech Research
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ChemTech

Composition, *in Vitro* Antioxidant and Antileishmanial activities of *Vitex agnus-castus* L. and *Thymus syriacus* Boiss. Essential Oils

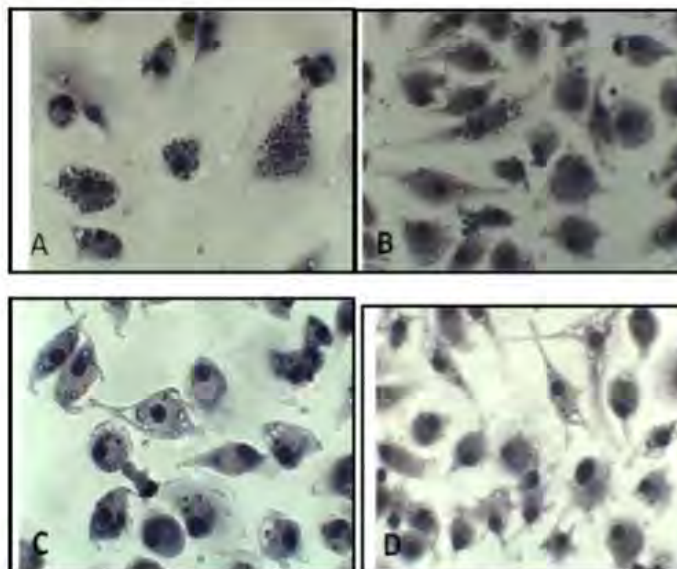
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Abstract: The essential oils represent valuable sources for active molecules against *Leishmania* infections and natural antioxidant. In this present study, essential oils from fruits of Syrian *Vitex agnus-castus* L. (VAC), and leaves of *Thymus syriacus* Boiss. (TS) were analyzed by gas chromatography-mass spectrometry. The main constituents found in VAC essential oil were 1,8-Cineole (14.25%) and Sabinene (11.54%), while the major constituents in TS essential oil were thymol (40.61%) and *p*-Cymene (20.40%). The antioxidant activity of the essential oils were determined by their scavenging effect on 2,2-diphenyl-1-picrylhydrazyl and total phenolic contents. The result showed that antioxidant activity of TS essential oil was higher than the antioxidant activity of VAC essential oil. Finally, the biological activity, of both VAC and TS essential oils, against *L. tropica* were determined using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide, and the IC₅₀ values were 211.62 µg/ml and 101.08 µg/ml, respectively. Therefore, further work is needed to identify the compound(s) responsible for the effects of VAC and TS essential oils and their correlation with *in vivo* studies.

Keywords: *Vitex agnus-castus* L.; *Thymus syriacus* Boiss.; essential oil; antioxidant activity; *Leishmania*.





Giardia duodenalis in Damascus, Syria: Identification of Giardia genotypes in a sample of human fecal isolates using polymerase chain reaction and restriction fragment length polymorphism analyzing method

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ABSTRACT

Giardia duodenalis is a common gastrointestinal parasite that infects humans and many other mammals. It is most prevalent in many developing and industrialized countries. *G. duodenalis* is considered to be a complex species. While no morphological distinction among different assemblages exist, it can be genetically differentiated into eight major assemblages: A to H. The aim of this study was to determine the genetic heterogeneity of *G. duodenalis* in human isolates (a study conducted for the first time in Syria). 40 fecal samples were collected from three different hospitals during the hot summer season of 2014. Extraction of genomic DNA from all *Giardia* positive samples (based on a microscopic examination) was performed using QIAamp DNA Stool Mini Kit. β -giardin gene was used to differentiate between different *Giardia* assemblages. The 514 bp fragment was amplified using the Polymerase Chain Reaction method, followed by digestion in *HaeIII* restriction enzyme. Our result showed that genotype A was more frequent than genotype B, 27/40 (67.5%); 4/40 (10%) respectively. A mixed genotype of A+B was only detected in 9 isolates (22.5%). This is the first molecular study performed on *G. duodenalis* isolates in Syria in order to discriminate among the different genotypes. Further expanded studies using more genes are needed to detect and identify the *Giardia* parasite at the level of assemblage and sub-assemblage.

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1. Introduction

Giardia is the most common of intestinal parasites worldwide. It is estimated that in developing countries, where poor levels of hygiene, sanitation, and overcrowding enhance *Giardia* transmission, about 200 million individuals develop symptomatic giardiasis and 500,000 new cases are reported each year (WHO 1996; Adam 2001). *Giardia* genus comprises of six species: *G. duodenalis* (syn: *G. intestinalis* or *G. lamblia*), *G. muris*, *G. microti*, *G. agilis*, *G. psittaci*, and *G. ardeae* (Adam 2001).

Giardia duodenalis has a variety of mammalian hosts including humans (Gardner and Hill 2001). It is transmitted to individuals via fecal-oral route by direct contact or by ingestion of resistant cysts from contaminated food or water (Karanis et al., 2007). The clinical

manifestations of giardiasis vary between asymptomatic infection to severe diarrheal illness with or without mal-absorption, weight loss, and abdominal cramps (Gardner and Hill, 2001).

Conventional diagnostic methods are used widely in many laboratories for the detection of *Giardia* cysts or trophozoites in stool samples using a light microscope (Adam, 1991). However, these methods are of low sensitivity, time consuming, and require microscopic experience. In addition, the identification of *G. duodenalis* genotypes is not possible using these simple methods, due to its morphological homogeneity (Amar et al., 2002).

Recently, a variety of molecular techniques, such as PCR-based diagnostic system, PCR-RFLP, cloning and sequencing analysis of a specific set of *Giardia* genes (glutamate dehydrogenase (*gdh*), triosephosphate isomerase (*tpi*), elongation factor 1 alpha (*efla*), beta giardin (*bg*) and 18S rRNA genes) proved to be sensitive, powerful, and specific analytical tools for detection of *Giardia* parasites in stool samples as well as for genotyping this complex parasite (Caccio et al., 2002; Wielinga and Thompson, 2007; Sprong et al., 2002; Soliman et al., 2011; Torres-Romero et al., 2014). By means



Fig. 2. PCR-RFLP assay (3% agarose gel electrophoresis) of the β -giardin gene products after restriction of the polymorphic region with *HaeIII* restriction enzyme. (a) Lane 1: undigested β -giardin gene products, Lanes 2,3,5: assemblage A, Lane 4: assemblage B. M: molecular marker (100bp). (b) Lane 1: undigested β -giardin gene products, Lanes 2-3: mixed assemblages A+B, M: molecular marker (50bp).

Table 2

The PCR-RFLP profile of *G. duodenalis* genotypes after digesting with *HaeIII* enzyme.

Assemblages	No. cases (%)	Fragment size
A	27 (67.5%)	200, 150, 117–113, 50 bp
B	4 (10%)	150, 117–113, 84, 26–24 bp
A+B mixed	9 (22.5%)	200, 150, 117–113, 84, 50, 26–24 bp

3. Results

Microscopic analysis of the 40 human stool samples confirmed *Giardia* infection. Cysts and/or trophozoites were observed in all fecal isolates after staining by Lugol's iodine.

Of the 40 giardiasis cases, 19/40 were females and 21/40 were males. Patients were comprised of 25 children (4 months to 10 years of age), 11 adolescents (11 to 15 years old) and 4 adults (16 years and up) (Table 1).

In addition, our data reported the presence of mild pasty diarrhea as a common clinical symptom, accompanied with growth disturbance, weight loss, and mal-absorption. Only 4 positive giardiasis cases presented foamy diarrhea.

PCR amplification of a fragment from β -giardin gene yielded the expected size which was approximately 514 bp from all isolates (Fig. 1). Our results showed different restriction patterns from fecal isolates belonging to assemblages A, B, and A+B mixed (Fig. 2a–b).

Among the fecal isolates, 27/40 (67.5%) cases were identified as assemblage A, which was defined by the presence of DNA bands at 200, 150, 113 and 50 bp. Whereas assemblage B, which generated DNA bands at 150, 117–113, 84, 26–24 bp, was found in very few samples 4/40 (10%). Finally, the genotype A+B was detected in 9/40 (22.5%) of fecal samples (Table 2).

4. Discussion

Giardiasis is a common cause of diarrheal disease in almost all vertebrates, including humans. It is widely spread in developing countries (Thompson, 2000; Tak et al., 2014).

(Mohammed Mahdy et al., 2009; El Fatni et al., 2014). Previous reports suggested that the reasons for high prevalence of giardiasis among the age group of 1–15 years old may be because they are easily exposed to contaminated water or for their lack of immunity (Karanis et al., 2007).

Microscopic detection of *Giardia* (cysts and/or trophozoites) in fecal samples is a traditional diagnostic method for giardiasis (Adam, 1991). However, this method is time-consuming, requires experienced microscopists, and is unable to distinguish between genetically distinct *G. duodenalis* isolates (Amar et al., 2002).

PCR-RFLP is a molecular sensitive tool and it is capable of distinguishing human isolates of *G. duodenalis* at the genotype level (Monis et al., 1996; Caccio et al., 2002; Lalle et al., 2005).

In this study, we used PCR-RFLP to distinguish between *Giardia* assemblages using β -giardin gene. This gene was used as a target for molecular identification of *Giardia*. The advantage of using giardin genes is that they are considered to be unique to this parasite (Faubert, 2000). The giardin proteins (29–38 kDa) are defined as a family of structural proteins. They are found at the edges of dorsal ribbons, which are an integral part of the ventral disk of the trophozoite (Adam, 2001).

Our results showed that the nested β -giardin amplification product yielded the expected fragment from all isolates; which is 100% consistent with our microscopic detection. Furthermore, genotyping analysis reported the presence of *G. duodenalis* assemblages A, B, and a mixed genotype A+B at different rates.

Among 40 fecal isolates, assemblage A was the most frequent genotype detected (67.5%), while assemblage B was less detected (10%). These results are in agreement with previous studies conducted in Egypt (75.5% A, 19.5% B, n=41, Helmy et al., 2009), Saudi Arabia (57.5% A, 37.5% B, n=40, Feng and Xiao 2011), Ethiopia (52% A, 22% B, n=59, Gelanew et al., 2007), Italy (80% A, 20% B, n=30, Caccio et al., 2002), Brazil (78.4% A, 21.6% B, n=37, Souza et al., 2007), and Thailand (71.4% A, 2.3% B, n=35, Traub et al., 2009). However, several studies conducted in India (Soliman et al., 2003), United Kingdom (Amar et al., 2002), United States (Guy et al., 2004) and Nepal (Singh et al., 2009) indicated that assemblage B was more

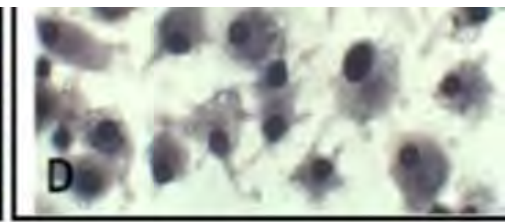
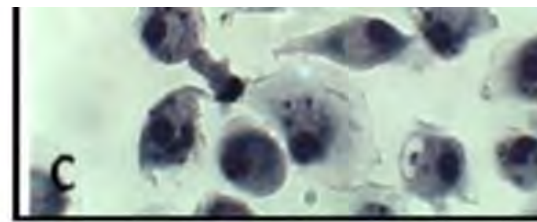
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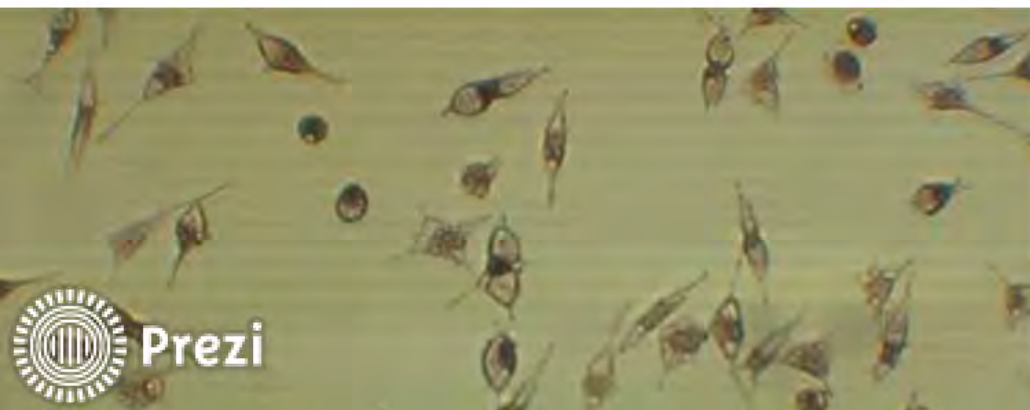
essential oil was higher than the antioxidant activity of VAC essential oil. Finally, the biological activity, of both VAC and TS essential oils, against *L. tropica* were determined using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide, and The IC_{50} values were 211.62 $\mu\text{g/ml}$ and 101.08 $\mu\text{g/ml}$, respectively. Therefore, further work is needed to identify the compound(s) responsible for the effects of VAC and TS essential oils and their correlation with *in vivo* studies.

Keywords: *Vitex agnus-castus* L.; *Thymus syriacus* Boiss.; essential oil; antioxidant activity; *Leishmania*.



Question 2

How to control Leishmaniasis in Syria?



Stem cells

AGISR 31 (4) 2013; 286-299 Ranad Al-Kadry *et al*

Application of a Modified Immunomagnetic Positive Selection Method for Isolation of Human CD34⁺ Stem/Progenitor from Cord Blood

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ABSTRACT

Umbilical cord blood (UCB) and isolated umbilical cord blood stem cells (UCBSCs) have become an alternative source of hematopoietic progenitor cells for transplantation. The aim of this study was to test the effectiveness of some modifications of human hematopoietic stem cells isolation protocols with the intention of improving the output and viability of CD34⁺ cells and progenitor subpopulations progeny that can be obtained from a sample of human umbilical cord blood. By that, we contribute to current studies on the human hematopoietic stem cells (HSCs) in order to bank UCB units suitable for basic research of very-long-term hematopoietic as well as for transplantation. Cord blood samples were transformed to buffy coat prior to the isolation of HSCs which was performed by two steps involving CD34 pre-enrichment using human cord blood CD34 positive selection kit and an Immunomagnetic cell separation, targeting CD34 surface antigen. CD34⁺ cells were immunophenotyped by four-color fluorescence, using a large panel of monoclonal antibodies (CD34/PE, CD45/FITC, CD38/APC, CD33/Per-Cy, HLA-DR/PE, CD117/APC, CD123/Per-Cy, CD105-FITC, CD56/PE, CD14/Per-Cy, CD19/Per-Cy and CD3/APC) recognizing different lineage or activation antigens. Our results showed that the percentage of CD34⁺ cells in whole human cord blood samples was 0.02% of total cells. After isolation by two-step, combining CD34 pre-enrichment and immunomagnetic isolation, the frequency of CD34⁺ stem cells represented 0.65% among total MNCs and 83.53% among total isolated cells. This isolation led to a purity of over 95% and viability of 98.60%. In addition, we found that the percentage of CD34⁺ cells which are CD45⁺ was 83.53%, whereas CD34⁺CD38⁻ cells comprised 21.70%. About 70.85% of isolated CD34⁺ cells were characterized by the absence of human leukocyte antigen-DR (HLA-DR). Concerning the CD117, CD33, CD123 and CD105 antigens which characterize true stem cells, we found a high expression percentage among isolated HUCB CD34⁺ cells (81.26%, 57.14%, 47.45%, 58.52% for CD117, CD33, CD123 and CD105, respectively), while a very small number displayed markers of advanced myeloid commitment, such as CD14 (Myeloid lineage, 0.7%) and CD56 (NK-cell lineage, 4.48%), or those of lymphoid differentiation: CD3 (T-cell lineage, 5.22%), and CD19 (B-cell lineage, 1.76%). After testing 12 samples of cord blood using modified positive magnetic isolation technique, no variations in subpopulations were observed from sample to sample. We conclude that our modified technique enabled us to obtain an important proportion of primitive hematopoietic progenitors, as suggested by

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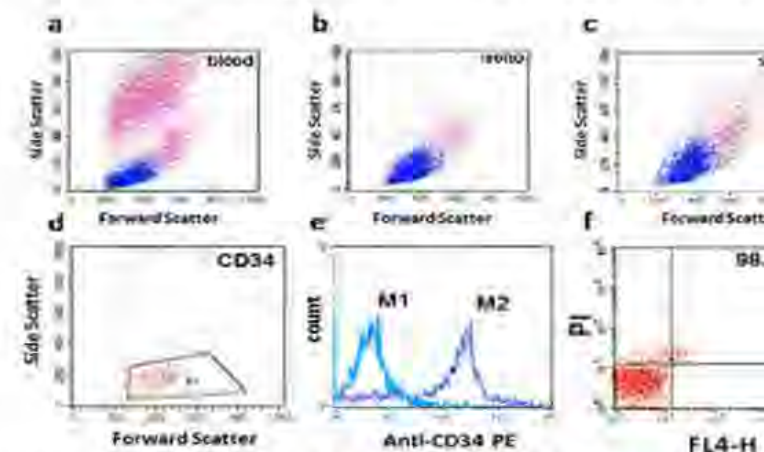
KEYWORDS

Hematopoietic stem cells (HSCs), CD34⁺ cells, Human umbilical cord blood, immunomagnetic separation, Immunophenotyping, Hematopoietic progenitors.

AGISR 31 (4) 2013; 286-299 Ranad Al-Kadry *et al*

الخلايا CD34⁺ بتقنية الجريان الخلوي بالتدفق، والحصول على نسبة مرتفعة من الخلايا الجذعية CD34⁺. كما بينت نتائج تنميط المجموعة الخلوية CD34⁺ أن الطريقة المتبعة في هذه الدراسة تؤدي إلى الحصول على الخلايا CD34⁺ بنقاوة عالية جداً بلغت قيمتها 95.53%. ويُشير التوبوغراف (الشكل 1) في (d) إلى المجموعة الخلوية CD34⁺. ويُبين (الشكل 2) إشارة فلورة الشاهد الإيجابي M2 بالمقارنة مع إشارة فلورة الشاهد السلبي M1. كما استُعمل صبغ PI النوعي للـ DNA الذي يعبر الأغشية الخلوية للخلايا الميتة بسبب الموت المبرمج، وتبين أن نسبة الخلايا CD34⁺ الحية هي 98.60% (الشكل 3).

الخلايا CD34⁺ بتقنية الجريان الخلوي بالتدفق، المختلفة من العزل (دم حبل سري، والإغناء على الفيكول، والعزل المغناطيسي للخلايا CD34⁺ ل المجموعات الخلوية على محوري التبعثر الأمامي Forward Scatter والتبعثر الجانبي Side Scatter. هذه المراحل: دم حبل سري (blood)، الخلايا العزل على الفيكول (mono)، المعلق الخلوي المهمل (super)، والخلايا المنواة (CD34⁺). تبين في (الشكل 2) أن نسبة الخلايا المنواة (d) العزل المتتالية التخلص من العديد من الأنماط



للات بيانية نقطية على محوري التبعثر FCS و SSC تبين الإغناء بالخلايا الجذعية المؤلفة للـ CD34 خلال مراحل العزل (a) دم الحبل السري (b) الخلايا وحيدة النواة بعد الإغناء الأولي والفصل على الفيكول (c) المعلق الخلوي المهمل بعد المغناطيسي (d) الخلايا CD34⁺ المعزولة مغناطيسياً (e) تمثيل هستوغرام لكل من إشارة فلورة الشاهد السلبي M1 وإشارة إيجابية M2. بعد حضن الخلايا المعزولة مع اصبغ ضد-CD34 متفلورة (f) تمثيل بياني نقطي يبين النسبة المنوية للخلايا باستعمال الصبغ PI المتفلور.

هذه الخلايا بعد التبعثر على الفيكول والإغناء الأولي (mono) إلى 0.65% بينما احتوى المعلق الخلوي المهمل (super) بعد العزل المناعي المغناطيسي فقط 0.27% ووصل المردود الخلوي للخلايا CD34⁺ المعزولة مغناطيسياً (CD34) إلى 83.53% وبنقاوة بلغت 95.53% وحيوية فُتُرت بـ 98.60% (الشكل 3: d-c+b-a).

يح التحليل الكمي للخلايا الجذعية CD34⁺ خلال الثلاث المختلفة غنى عينات دم الحبل السري بهذا ونجاح عملية الإغناء بهذه الخلايا بطريقة الإنتقاء في هذه الدراسة، حيث بلغت النسبة المنوية للخلايا دم الحبل السري (blood) 0.02%، وارتفع مردود

GOAL



-6-
Satisfying my scientific and research
passion by studying various topics related
to certain parasites such as *Toxoplasma*,
Cryptosporidium, antihelminthic drugs
resistance in animals, as well as tick
resistance against pesticides

**Move toward
your goals**

GOAL

STOP
The end

**-1-
Gain all possible
experience**

-2-

Follow up all new in the field of parasitology and molecular biology, and gain the ability to understand what is happening around us in this domain

**-1-
Gain all possible
experience**

-2-

Follow up all new in the field of parasitology and molecular biology, and gain the ability to understand what is happening around us in this domain

-3-

Building a network of relationships within Syria among interested people, and also establishing another effective network with interested colleagues in the Middle East and neighboring countries, with research centers in the world and developed countries.



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**To contribute effectively
to the development of
research plans in Syria
and to start them
correctly**

-5-

**Make use of all the internal
and external networks in
training and start important
research**

-6-

Satisfying my scientific and research passion by studying various topics related to certain parasites such as *Toxoplasma*, *Cryptosporidium*, antihelminthic drugs resistance in animals, as well as tick resistance against pesticides

SUCCESS

THE PROJECTS

Lives In

Hama University + Damascus University


Experience and Skills

- Fecal And blood examination for parasitological diagnosis.
- Diagnosis and identification of ectoparasites.
- Identification of ticks species.
- Identification of Gastro-intestinal helminthes from ruminants and other domestic animals and birds.
- Good knowledge of some statistical and epidemiological programs and tools.
- PCR test and it's applications.
- management of broiler grand parents and breeder flocks.

Data

I can Help for any Data needed or Scientific information from Syria (man+animal), and may samples .




Photos



Project 1

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Evaluation of Protective Immunity against *Eimeria tenella* Infection in Broiler Chickens Induced by Immunization with Some Recombinant Proteins

Project 2

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Idintification of Ticks Species in Ruminants of Syria



Hyalomma spp.
Rhipicephalus spp.

Project 3

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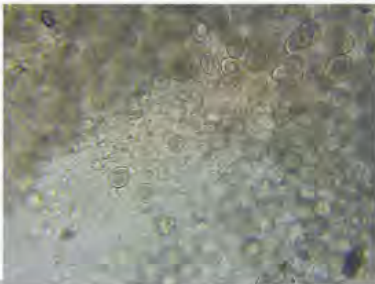
Isolation and genotyping of *Cryptosporidium* spp. by PCR-RFLP Analysis

E PROJECTS

Project 1

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Evaluation of Protective Immunity against *Eimeria tenella* Infection in Broiler Chickens Induced by Immunization with Some Recombinant Proteins

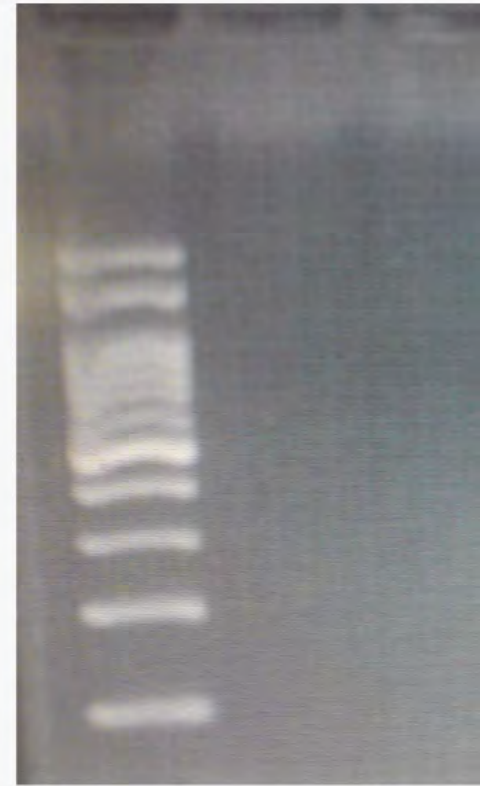


Project 2

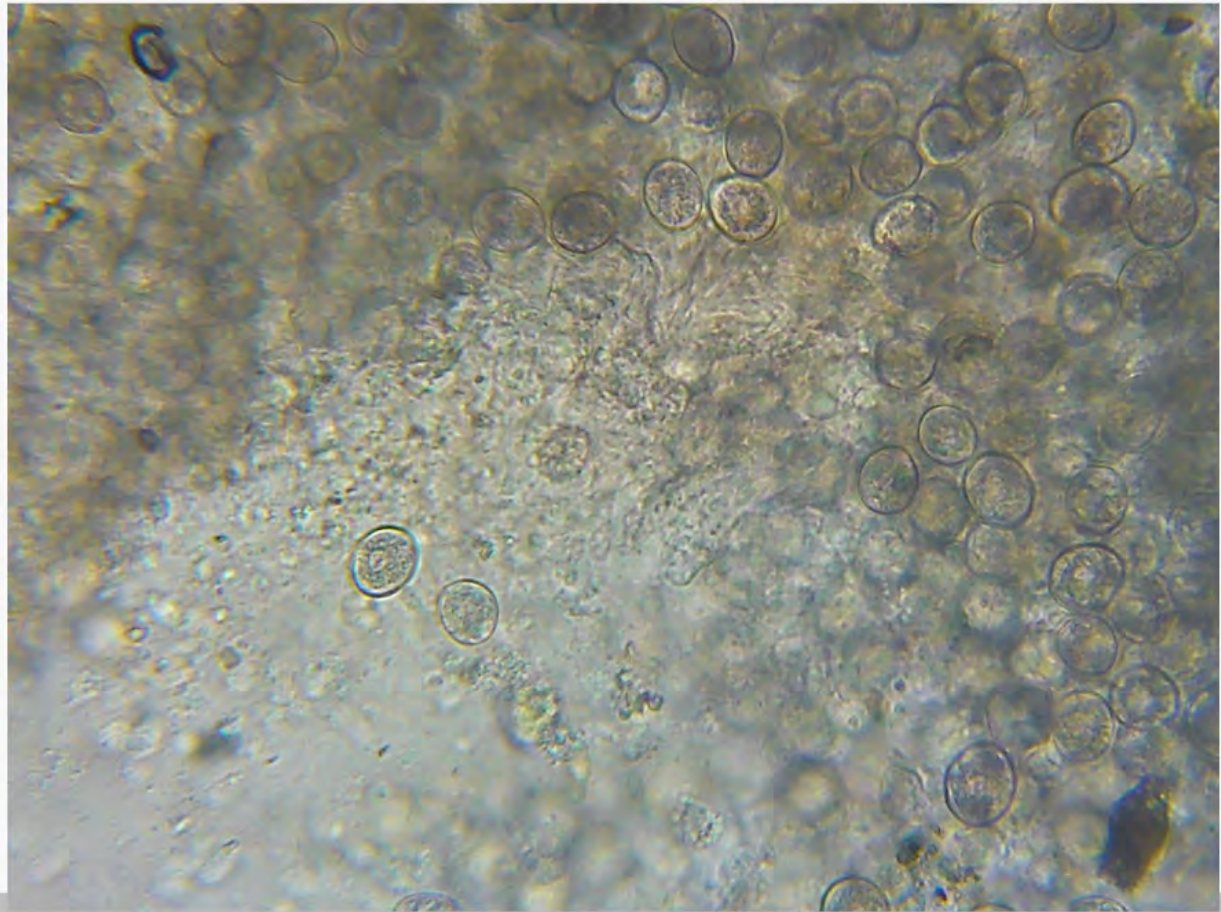
like 77 comment 0 share 3

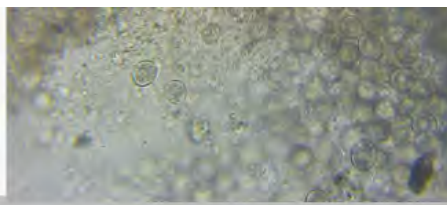
Idintification of Ticks Species in Ruminants of Syria

against *Leishmania* infection vaccination with Some Recomb



er Chickens Induced by In ns





Project 2

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Identification of Ticks Species in Ruminants of Syria



Hyalomma spp.

Rhipicephalus spp.

Project 3

like 333 comment 123 share

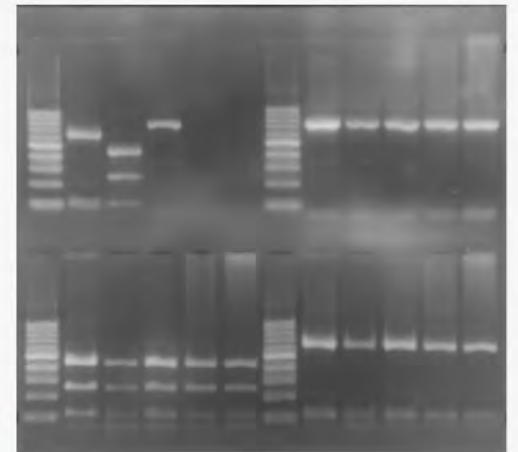
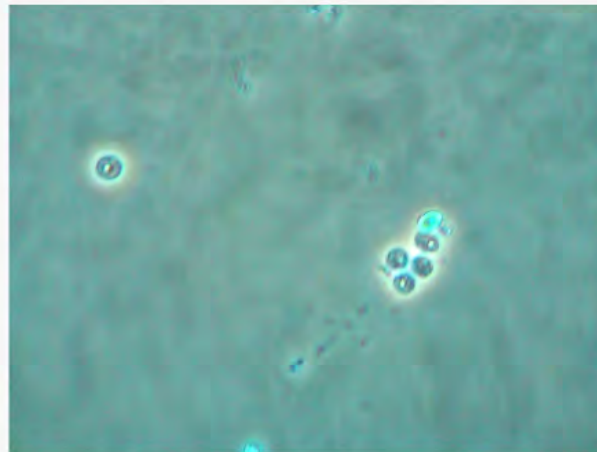
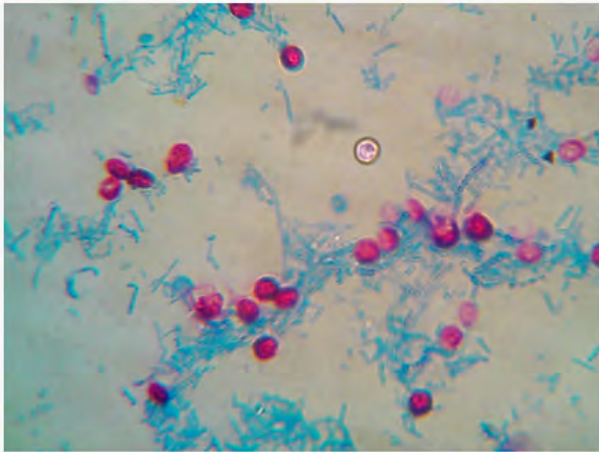
Isolation and genotyping of *Cryptosporidium* spp. by PCR-RFLP Analysis



Project 3

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Isolation and genotyping of Cryptosporidium spp. by PCR-RFLP Analysis



Hama University + Damascus University

Experience and Skills



- Fecal And blood examination for parasitological diagnosis.
- Diagnosis and identification of ectoparasites.
- Identification of ticks species.
- Identification of Gastro-intestinal helminthes from ruminants and other domestic animals and birds.
- Good knowledge of some statistical and epidemiological programs and tools.
- PCR test and it's applications.
- management of broiler grand parents and breeder flocks.

Data

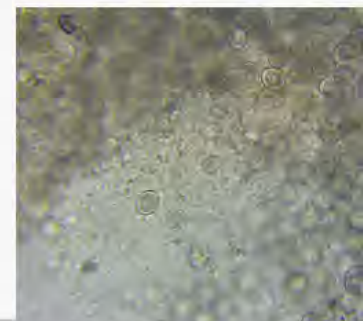


I can Help for any Data needed or Scientific information from Syria (man+animal), and may samples .

Photos



Evaluation of Protective Broiler Chickens Induced Proteins



Project 2

Idintification of Ticks



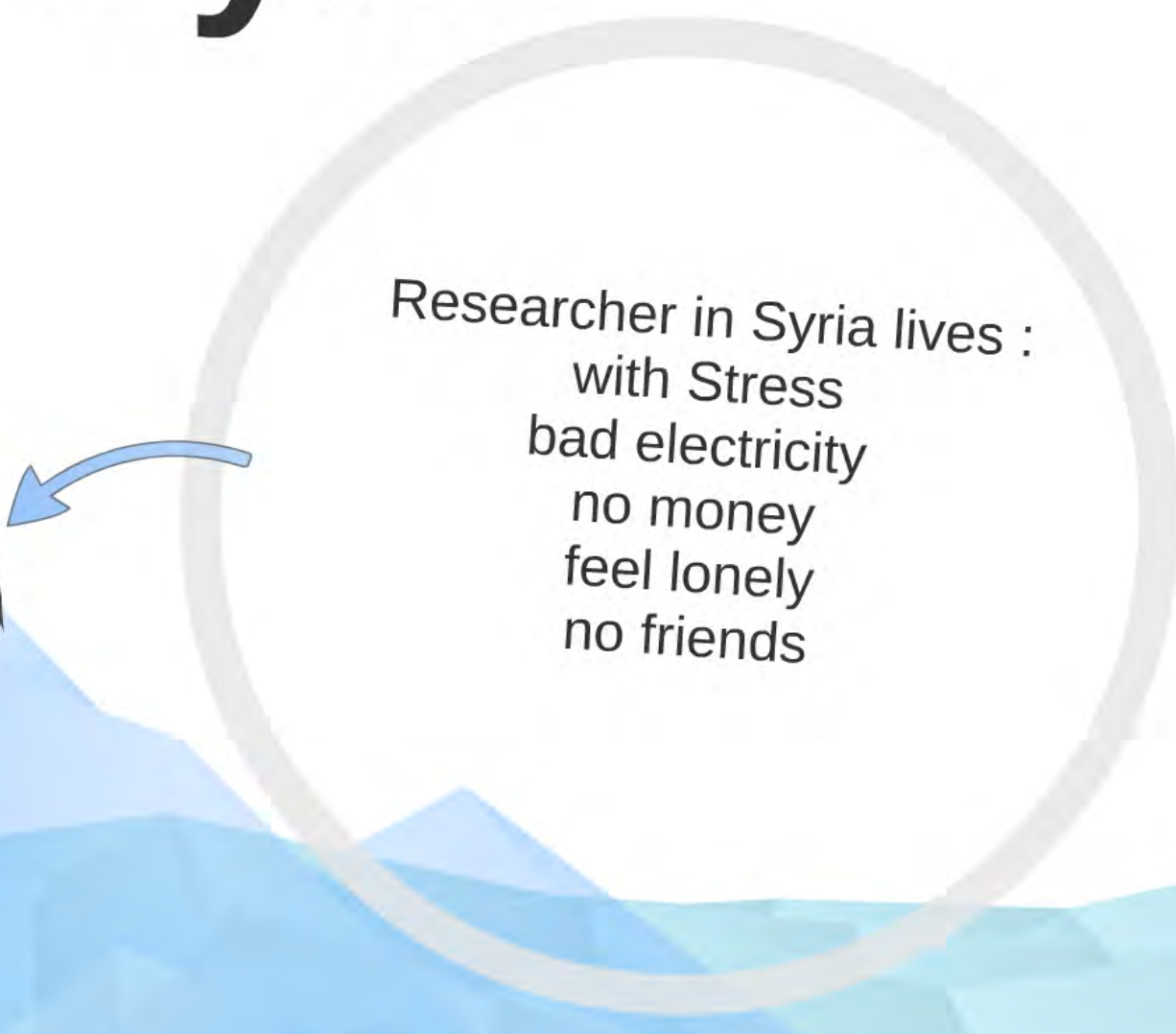
Hyal
Rhipi

crisis in Syria



Difficulties in the Area

s in Syria



Researcher in Syria lives :
with Stress
bad electricity
no money
feel lonely
no friends

Economic decline and poverty



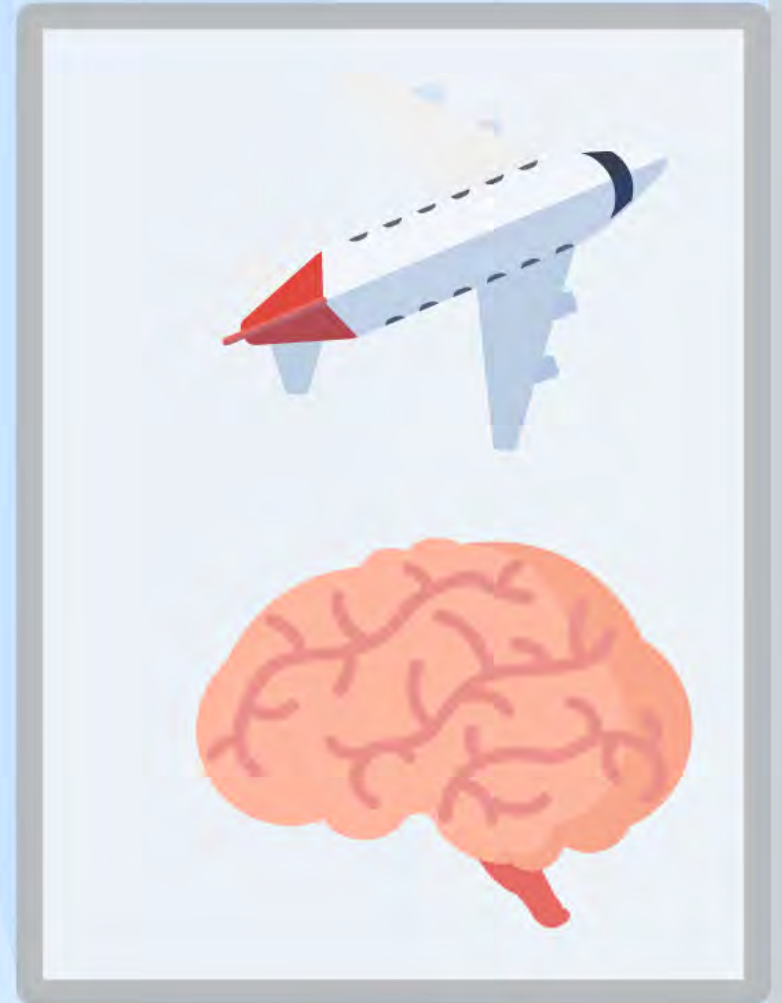
dangerous condition of
working

no trained staff

no enough resources

Dangerous mobility

**The escape of
trained persons
outside Syria for
many reasons**





lack of communication and
exchange of experiences
with international
universities

so hard to repair or buy
devices and materials.

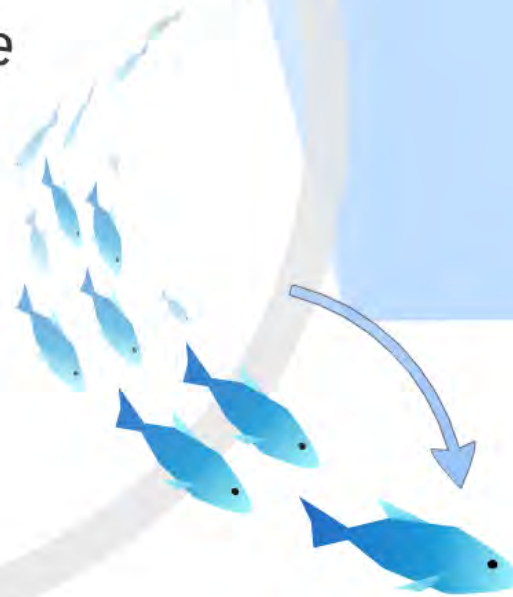




Economic sanctions and ban



But there are always
solutions, and you have
to get around the
mountain to get past it





Before the Crisis and After

Many thanks to all MeBoP Team

and I want to say I'm so grateful to:

Dr.Lilach

Prof. Dr. Christian Leumman

Eva

Dr.Ellen

Dr. Isabel

Meagan

Linka



You spent a lot of time and effort to be here with
you