ISTITUTO ZOOPROFILATTICO SPERIMENTALE DELLA SARDEGNA G. Pegreffi
National Reference Laboratory for Echinococcosis
WOAH Reference Laboratory for Echinococcosis
World Organisation for Animal Health
Founded as OIE
CENTRO NAZIONALE DI REFERENZA PER L'ECHINOCOCCOSI
CeNRE

Cinzia Santucciu

Achievements, outcomes and perspectives of the NRL for Echinococcosis after fruitful years of cooperation with hyperendemic countries

19TH workshop of the national reference laboratories for parasites

(6-7 November 2024 - ROMA)

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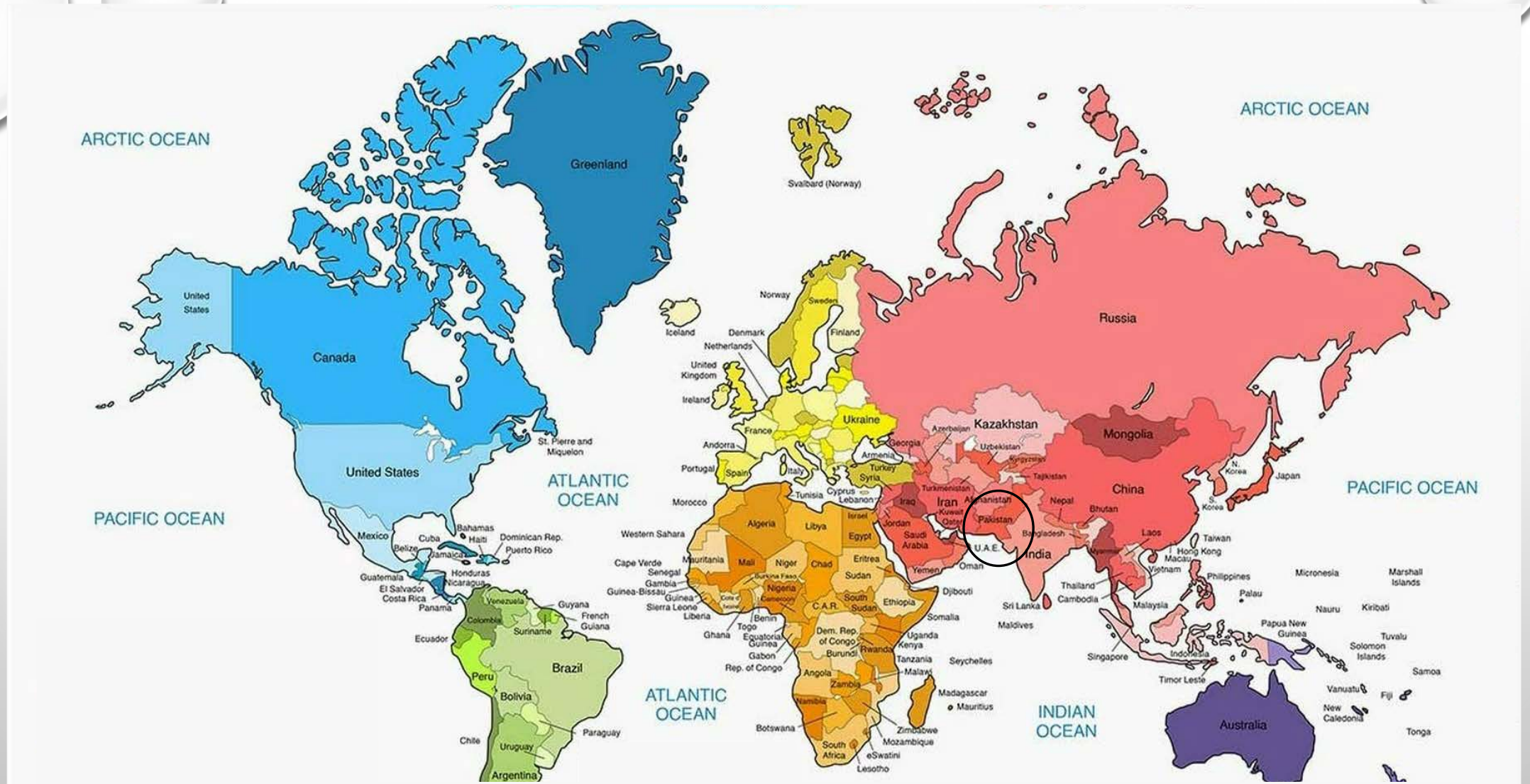

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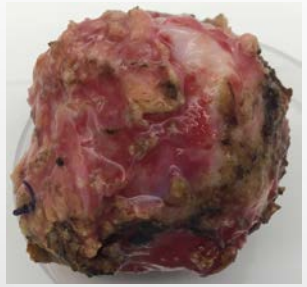
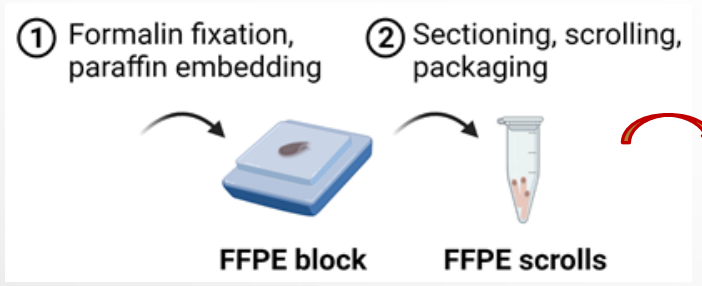
PROTECTION OF NOT PUBLISHED DATA

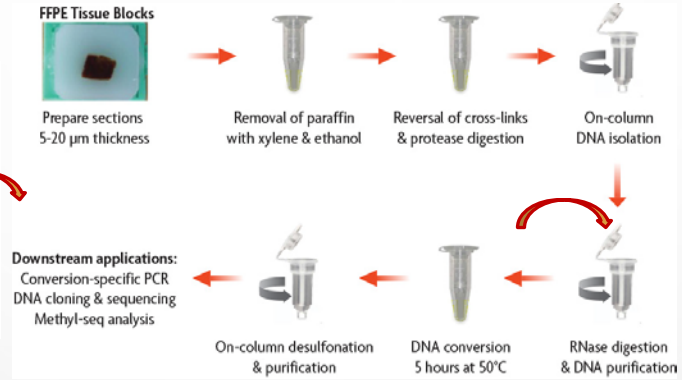
Cystic Echinococcosis in Pakistan: *Echinococcus Granulosus Sensu Stricto* Identification and Genotyping in Human Cyst Isolates

Khan Huma[1], Bonelli Piero[2], Peruzzu Angela[2], Farina Francesca[2], Masala Giovanna[2], Ahmed Haroon[1], Santucciu Cinzia[2]*

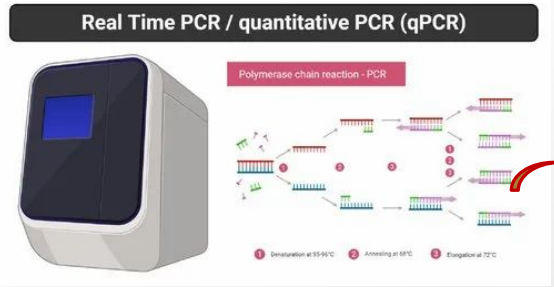


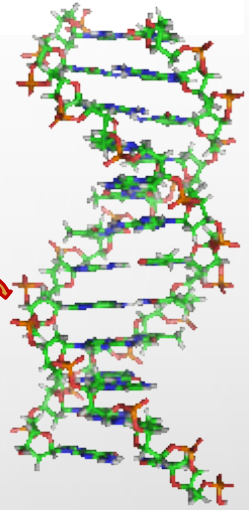


We collected 251 FFPE CE cysts, from four major hospitals in Peshawar, Pakistan during 2007-2021



Genomic DNA extraction by QIAamp DNA FFPE Tissue Kit





Real-time PCR to identify *Echinococcus* species and SNP genotyping for G1 or G3 determination

- Genomic DNA was successfully extracted from 106 samples, identified positive for *E. granulosus s.s.* by real-time PCR.
- SNP genotyping showed 79.3% of G1 and 20.7% of G3 genotype.

We confirmed a high percentage of CE in Pakistan……..According to several studies G1 is also the most common genotype worldwide with high (88.44%) infectivity for human ……substantially greater clinical percentage (20.7%) of the G3 genotype

- **Dr Emmanuel Jolaoluwa Awosanya,** emmafisayo@yahoo.com

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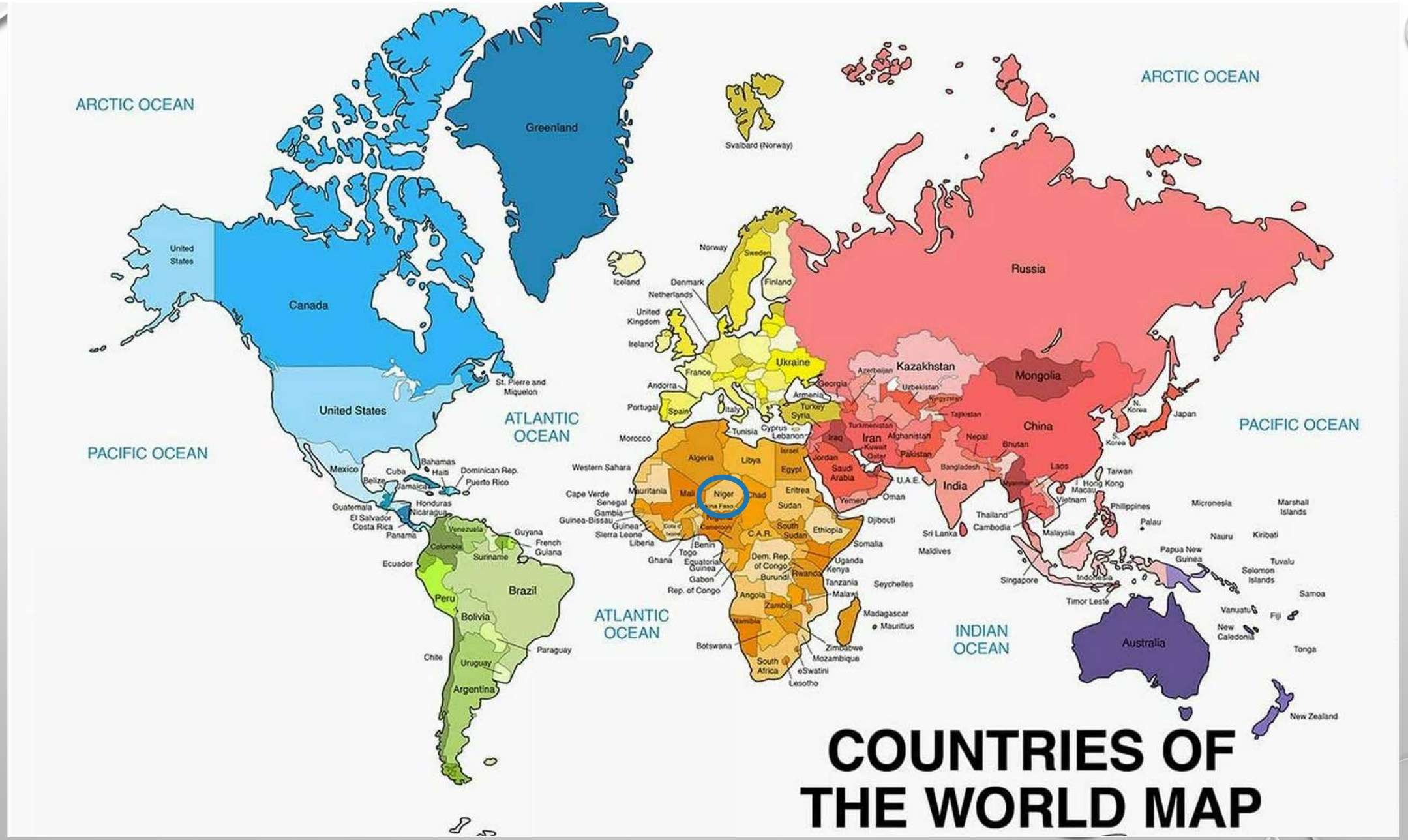


veterinary sciences
MDPI

Article

Prevalence of *Echinococcus granulosus sensu lato* in Owned Dogs in Lagos State, Nigeria

Echinococcus granulosus sensu lato (s.l.) infection in dogs poses risk of transmission to their owners and family members.

fecal samples collected from 217 owned dogs

faeces inactivated at -80°C

sedimentation test taeniid eggs screening

multiplex PCR Trachsel 2007

DNA extracted by QIAamp® Fast DNA Stool Mini Kit

SPECIES	TAENIID EGGS	*E. granulosus s.l.*
Positive fecal samples	13 (6.0%)	12 (92.3%)

Questionnaire administered to dog owners evidenced that dogs with higher probability of infection lives in suburban areas and were kept for security purposes

we confirmed a high distribution of *E. granulosus* in Nigeria

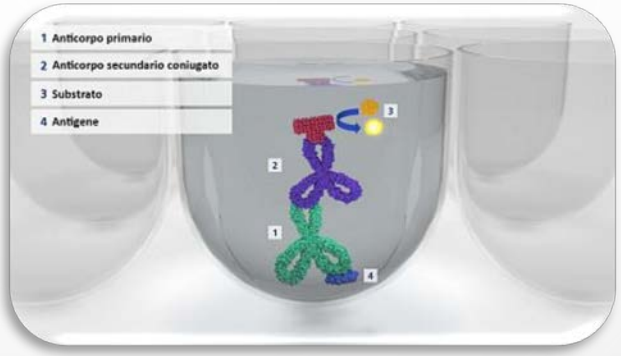
Original Article

JIDC | THE JOURNAL OF INFECTION IN DEVELOPING COUNTRIES

Seroprevalence and determinants of *Echinococcus granulosus* sensu lato infection among owned dogs in Ibadan, Nigeria

Lucky Icomiare Adebudo[1], Sirin Ndiaye[1], Ikeoluwapo Ajayi[2], Babasola Oluseyi Olugasa[1], Piero Bonelli[3], Emmanuel Jolaoluwa Awosanya[1]

Sera collected from 185 dogs on routine visits



"Canine Echinococcus granulosus indirect ELISA kit" qualitative commercial from Shenzhen Biobase Biotechnology Co., China

Seroprevalence for *E.g.* infection	Questionnaire administered to dog owners evidenced that Eg seropositivity was significantly associated with
33.51% (95% CI: 26.71, 40.32%)	Low educational level of dog owners; local dog breeds; confinement; interaction with other dogs; self-dewormed dogs and never dewormed dogs

Conclusions: Deworming practices should be based on the recommendations of a veterinarian to effectively prevent E.g. transmission from dogs to humans.

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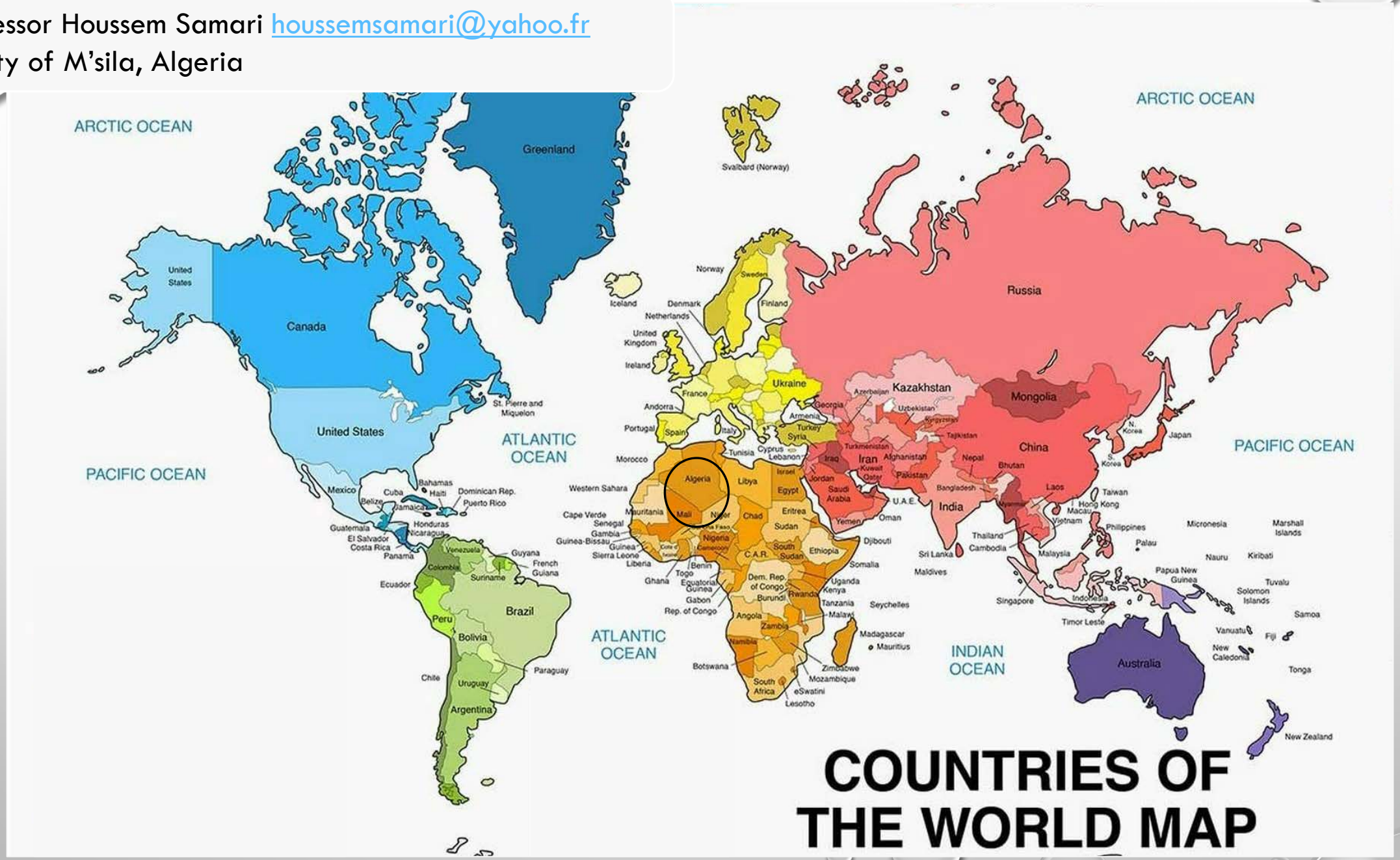

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Molecular Characterization Of E. Granulosus From Domestic And Wild Mammals From Algeria

257 fecal samples collected from stray and owned dogs wild animals

faeces inactivated at -80°C

sedimentation test
taeniid eggs screening

DNA extracted by QIAamp® Fast DNA Stool Mini Kit

- multiplex PCR (Trachsel et al., 2007)
- Real Time PCR (Maksimov et., 2020)
- Sequencing

SPECIES	*E. granulosus s.l.*
Positive fecal samples	???

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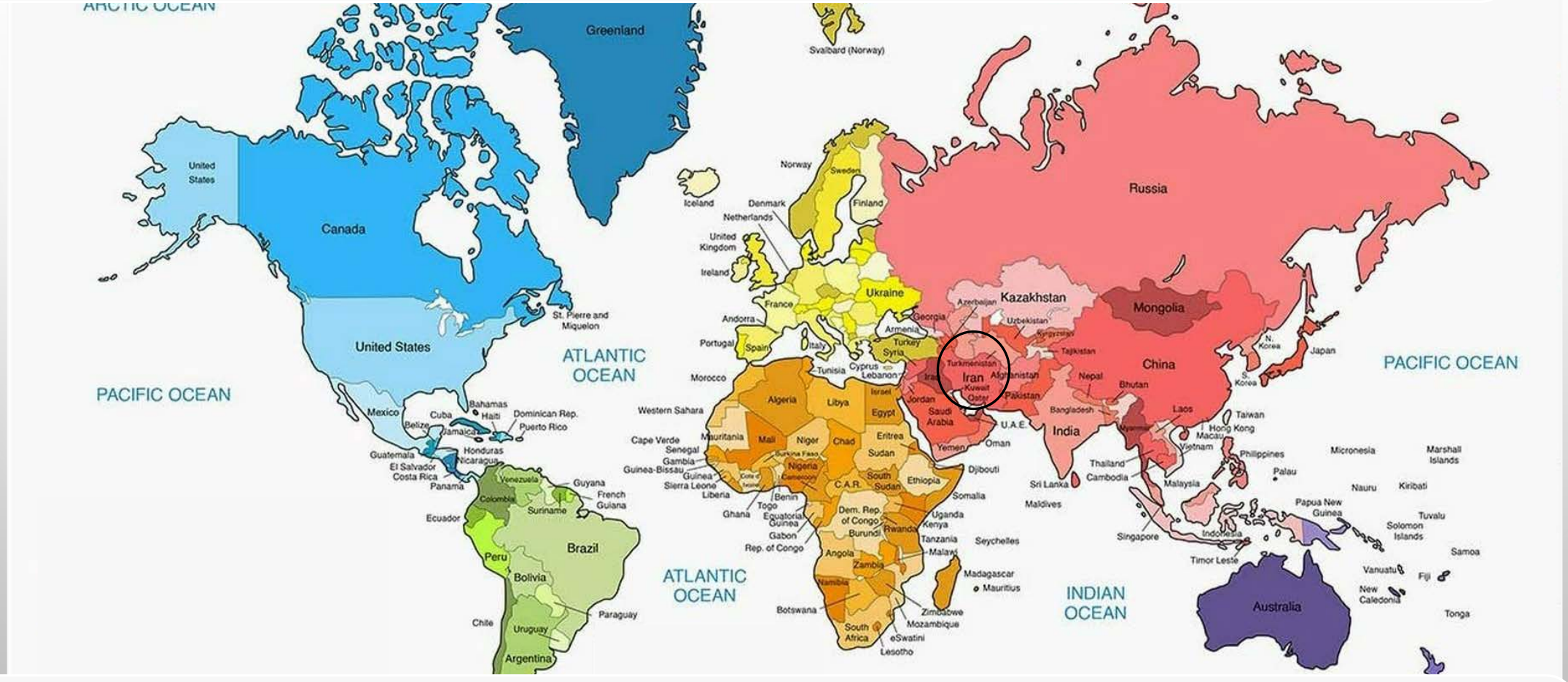

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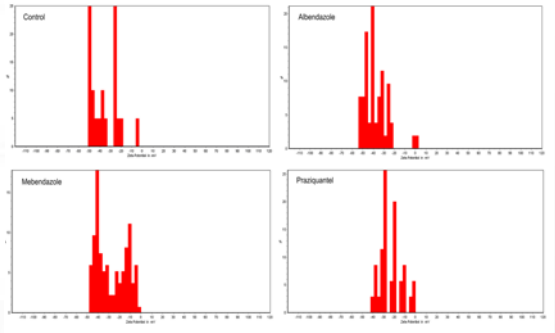
pathogens

MDPI

Article

Evaluation of the *In-Vitro* Effect of Albendazole, Mebendazole and Praziquantel Nanocapsules Against Protoscolices of Hydatid Cyst

Nooshinmehr Soleymani[1], Soheil Sadr[1], Cinzia Santucciu[2*], Abbas Rahdar[3*], Giovanna Masala[2], Hassan Borji[1*]



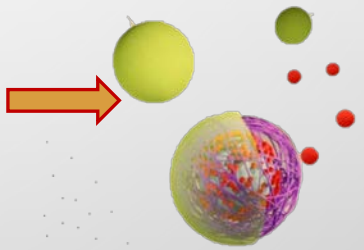
Hydatid fluid aspirated from sheep liver infected with *E. granulosus s.l.*

Sedimentation of protoscolices washed with PBS

Colture of Protoscolices

Protoscolices incubated

Nanocapsules functionalised with drugs



ABZ – MBZ – PZQ
ABZ+MBZ
ABZ+PZQ
MBZ+PZQ

CONCENTRATION /TIME

0,25mg/ml 10min

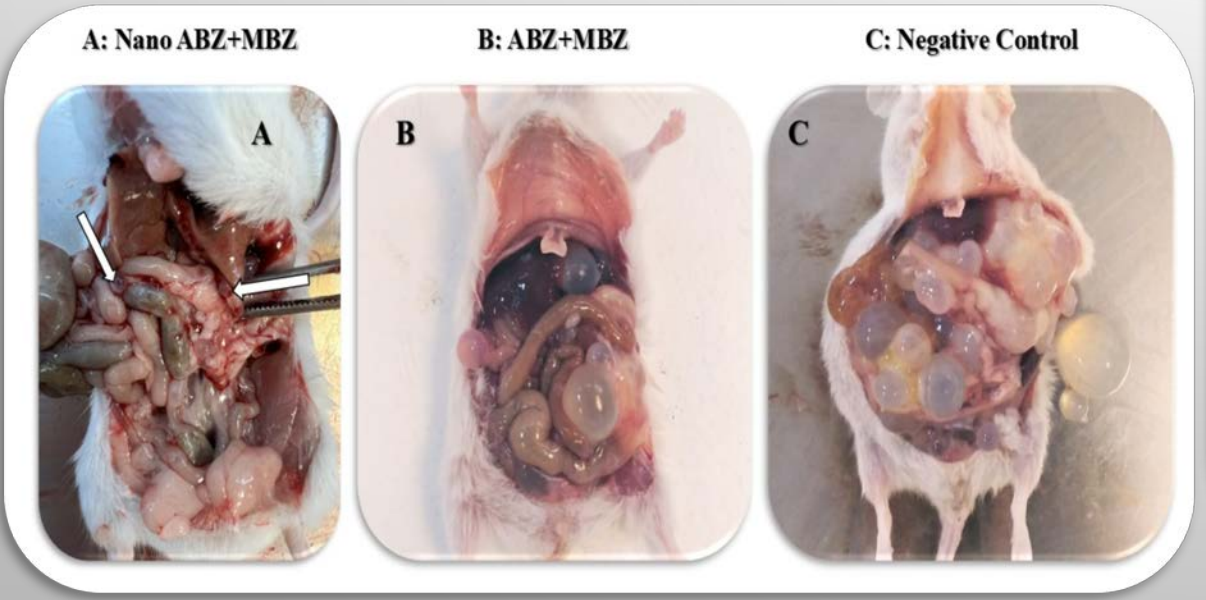
0,50mg/ml 60min

1mg/ml 120min

Control groups

GREATEST PROTOSCOLICIDAL ACTIVITY
ABZ + MBZ nanocapsules
concentration: 1 mg/mL - 120 min.

69 female white mice (BALB/C),
8 weeks old, weighing 25g, intraperitoneally injected with 1500 live protoscoleces of E. granulosus
randomly divided into 13 groups
1 group Albendazole nanocapsules (Nano-ABZ),
2 group Mebendazole nanocapsules (Nano-MBZ),
3 group Praziquantels nanocap-sules (Nano-PZA),
4 group ALB+MBZ nanocapsules (Nano-ALB+MBZ),
5 group ALB+PZA nanocapsules (Nano-ALB+PZA),
6 group MBZ+PZA nanocapsules (Nano-MBZ+MBZ)
7-12 groups control group
13 negative group no treatment only PBS



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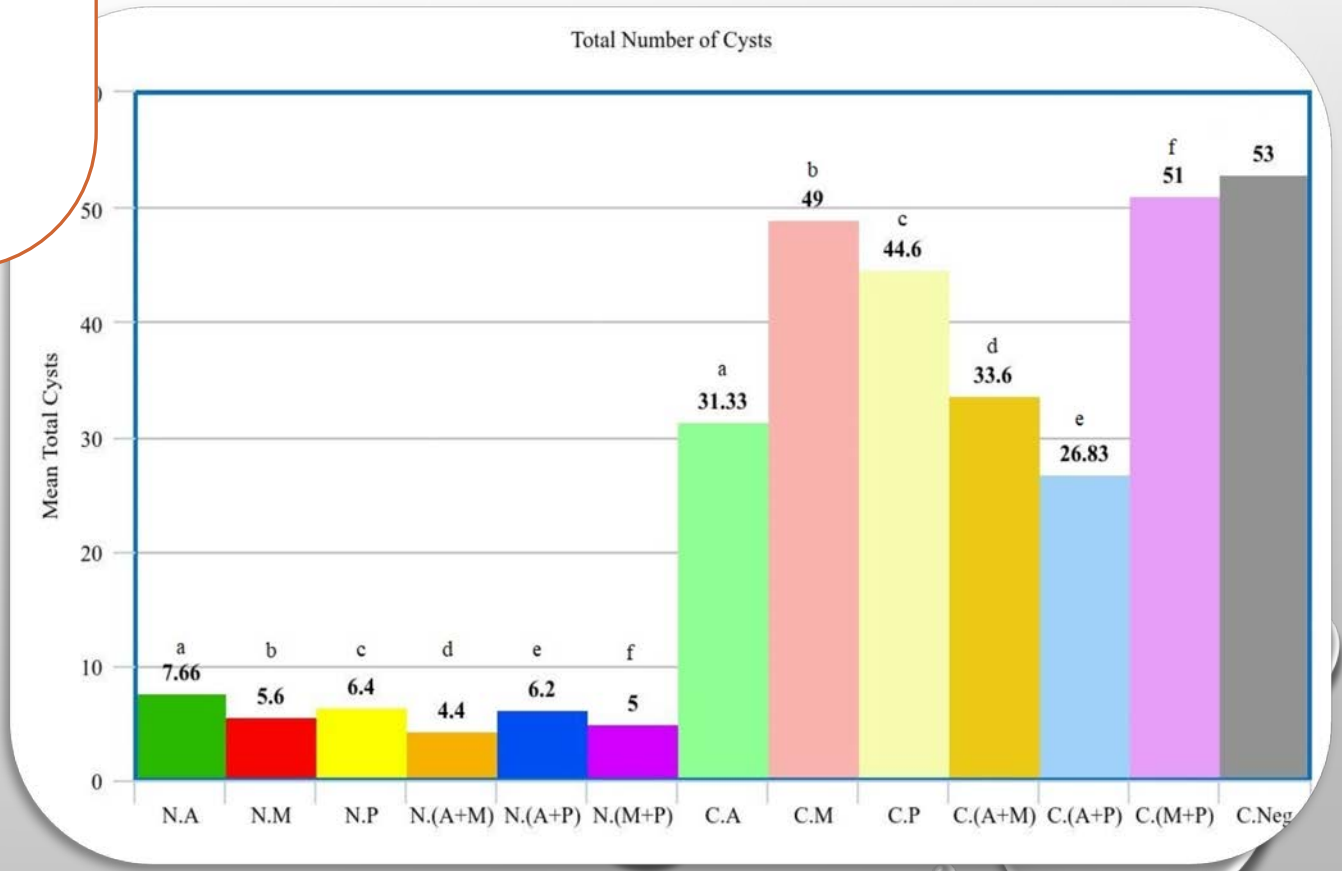
pathogens .....almost ready to submission!

Article

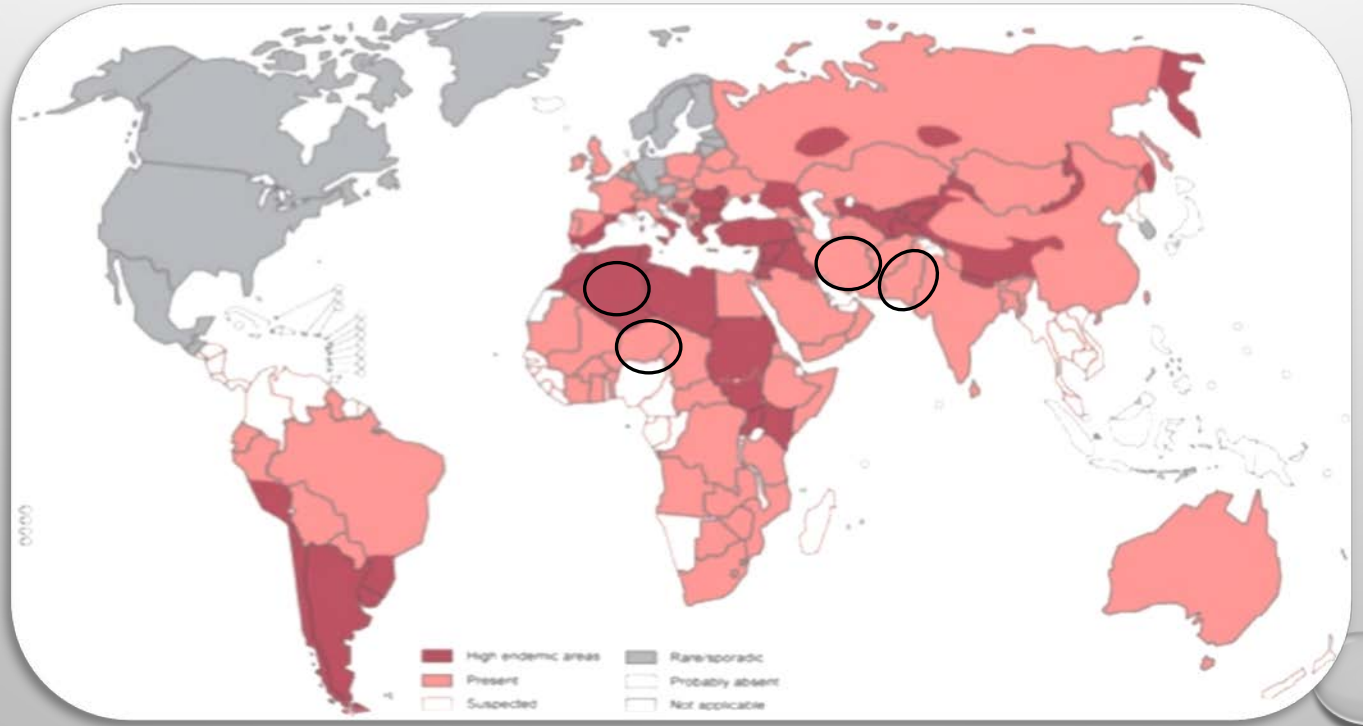
In vivo Investigation of the Therapeutic Effects of Albendazole, Mebendazole, and Praziquantel Nanocapsules in Hydatid Cyst-Infected Mice

Nooshinmehr Soleymani [1], Soheil Sadr [1], Cinzia Santucciu [2,*], Abbas Rahdar [3,*], Giovanna Masala [2] and Hassan Borji [1,*]



CONCLUSIONS

- Our projects performed with a One Health approach
- confirmed a CE and *E. granulosus s.l.* distribution in the countries we involved
- as future perspective we aim to collect more epidemiological data
- to help to develop actual strategies:
  such as surveillance, eradication plan as well as vaccination and
- also we underlight the great potential of drug-nanoparticles
  as helpful tools for CE treatment not only in hyperendemic countries



Worldwide distribution of cystic echinococcosis, 2011.

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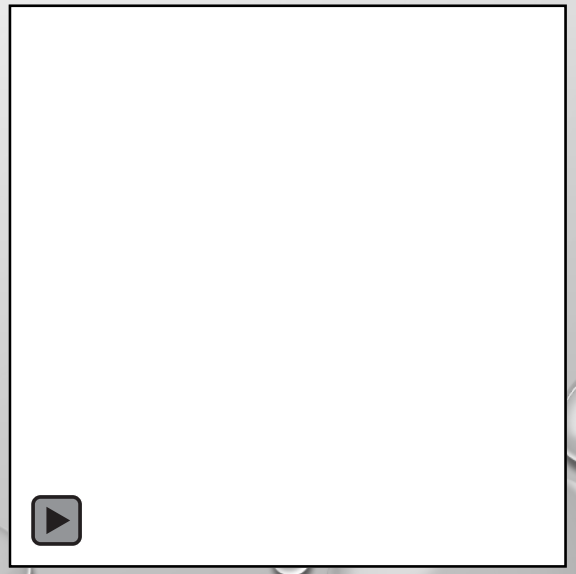

Thank you for your attention!!!