وەزارەتی خوێندنی باڵا و توێژینەوەی زانستی

Ministry of Higher Education &

Scientific Research

PhD Research Proposal	**پرۆپۆزەڵی توێژینەوە بۆ بەدەستهێنانی بروانامەی دکتۆرا**

1. Title of PhD research proposal **ناونیشانی پرۆپۆزەڵی توێژینەوەی پێشنیازکراو**

فریدون عزیز احمد

In vitro and In vivo Assessment Infection Control of Some Multi drug Resistance Gram Negative Bacteria by Using Some Biosynthesis Nanoparticles .

2. General information		**زانیاری گشتی**
Name and surname of the supervisor 1	Payman Akram Hamasaeed	ناوی سیانی سەرپەرشتیار 1
Scientific title	Professor	پلەی زانستی سەرپەرشتیار 1
E-mail	Payman.hamasaeed@su.edu.krd	ئیمێلی سەرپەرشتیار 1
Mobile	07504531839	ژمارەی مۆبایل
Department	Biology	ناوی بەشی زانستی
College / faculty	Education	کۆلیژ / فاکەڵتی/سکول
university's name	Salahaddin	ناوی زانکۆی میلاکی سەرپەرشتیار
Name and surname of the supervisor 2(If it is available)	Khadija Khalil Mustafa	ناوی سیانی سەرپەرشتیار 2 (ئەگەر هەیە)
Scientific title	Professor	پلەی زانستی سەرپەرشتیاری 2
E-mail	Khadija.mustafa@su.edu.krd	ئیمێلی سەرپەرشتیار 2
Mobile	07504451181	ژمارەی مۆبایل
Department	Biology	ناوی بەشی زانستی
College / faculty	Education	کۆلیژ/ فاکەڵتی/سکول
university's name	Salahaddin	ناوی زانکۆ

3. Summary (Abstract)

This should be not more than 200 words and not less than 75 words.

ئەبستراکتی توێژینەوەی پێشنیازکراو. لە 200 ووشە زیاتر نەبێت و لە 75 ووشە کەمتر نەبێت.

Isolation and identification of Gram positive bacteria from different clinical sources by using manual methods including morphological, cultural and biochemical tests, then confirmed by

Molecular study by using polymerase chain reaction and by using 16srRNA gen and sequencing. Studding the effect of different antimicrobials against isolated bacteria. Studding the relationships between bacterial infection sex, age, type of specimen and treatment . Studding some virulence enzyme of isolated bacteria such as DNase , lipase, gelatinase, urease, protease, beta lactamase, Extended Spectrum ß-Lactamase (ESBL) …etc. Also detection of biofilm in isolated bacteria by using different methods.Biosynthesis of some nanoparticles and then studding the effect of these nanoparticles on the Gram positive bacterial growth in vitro and in vivo by using the rats and also studding some immunologically .

4. Introduction **پێشەکی**

To be completed by the primary supervisor: an overview of the proposed research project, focusing on the background of the project and rationale for the research.

لێرەدا سەرپەرشتیاری سەرەکی پوختەیەک دەربارەی پرۆژەی توێژینەوەکە دەنووسێت، تیایدا باکگراوندی پرۆژەکە باس دەکات و ڕوونی دەکاتەوە کە بۆچی ئاراستەکردنی ئەم توێژینەوەیە گرنگە.

Injuries are causing considerable morbidity and mortality in many parts of the world, particularly in the low and middle income countries, even in developed countries, more than 2 million individuals annually are require medical treatment. However, the structure of the etiologic agents of wound infection in each hospital varies considerably and cannot be predicted exactly. One of the most disconcerting facts about the bacteria is their increasing antimicrobial resistance . The Gram-positive such as bacteria like Streptococcus species, Enterococci species and Staphylococcus species being the most common pathogen

Nanoscience and nanotechnology has attracted a great interest over the last few years due to its potential impact on many scientific areas such as energy, medicine, pharmaceutical industries, electronics, and space industries. This technology deals with small structures and small-sized materials of dimensions in the range of few nanometers to less than 100 nanometers. Nanoparticles (NPs) show unique and considerably changed chemical, physical, and biological properties compared to bulk of the same chemical composition, due to their high surface-to-volume ratio. NPs exhibit size and shape-dependent properties which are of interest for applications ranging from biosensing and catalysts to optics, antimicrobial activity .These particles also have many applications in different fields such as medical imaging, nanocomposites, filters, drug delivery, and hyperthermia of tumors .

5. Research objectives

Clarify the research objectives and planned methodology to meet the challenges of the project. Include details of the research plan and relate to the previous work carried out by others.

لێرەدا سەرپەرشتیار دەبێت ئامانجەکانی توێژینەوەکە ڕوونبکاتەوە و باس لە میتۆدەکانی ڕووبەرووبوونەوەی ئەو تەحەدیاتانە دەکات کە لەکاتی توێژینەوەدا دێتە ڕێگای، هەروەها گرنگە کە پلانی توێژینەوەکە ببەستێتەوە بەو کارانەی کە پێشتر لەو بوارەدا ئەنجام دراون.

The aim of the present study was to analyze the isolation, identification of GP bacteria ,molecular study and antimicrobial resistance patterns of isolated bacteria. Detection some virulence enzymes, detection of biofilm producer. finally Biosynthesis of some nanoparticles and then studding the effect of these nanoparticles on the Gram positive bacterial growth in vitro and in vivo by using the rats and also studding some immunologically parameters .

6. Methodology and data collection

In this section the supervisor should describe the methodology of the proposed research

لێرەدا سەرپەرشتیار باس لە میتۆدەکانی ئەنجامدانی توێژینەوەکە و شێوازی کۆکردنەوەی داتاکان دەکات.

Materials and Methods

Samples

Clinical specimens will be collect from patients attending to different Hospitals in Erbil city. All Gram positive bacterial isolates are identify depending on morphological, cultural, biochemical tests and PCR by using specific gen 16srRNA.

Antibacterial susceptibility testing

Antimicrobial susceptibility testing are perform for all GP bacteria by using the standard Kirby-Bauer disk diffusion methods.

ß-Lactamase and ESBL detection

All GPB species are screen for ESBL enzyme production by the following methods**:** ESBL detection is carry out by standard disk diffusion methods for all isolates according to the standard institute of antimicrobial susceptibility testing .

Protease assay: Protease activity are perform by spreading isolates on nutrient agar containing 10% skim milk, after incubation for up to 24 h at 37°C, protease production are shown by the formation of a clear zone cause by casein degradation .

DNase assay: extracellular nucleases (DNases) are determine on DNase agar plates .

Phospholipase assay: overnight cultures of isolated bacteria screen for their extracellular phospholipase activity by growing them on egg yolk agar .

Haemolysin assay: Haemolysin production are determine using blood agar plates and also cell free haemolytic method .

Slime test: brain heart infusion agar plates are prepare containing 0.8 g/l Congo red, isolates are inoculate onto the surface of the medium and the plates are incubate at 30°C for 24 h. Bacteria producing slime appear as black colonies, whereas, non-slime producers remain non pigmented .

Biofilm formation detection

All bacteria will be test by for the detection of biofilm formation by using different method such as microtiter plate and congo red agar.

Polymerase Chain Reaction (PCR) and sequencing

DNA extraction is perform as recommend by the manufacturer of . PCR reaction mixtures , PCR condition , program ,agaros gel preparation and gel electrophoresis and then sequenced.

Biosynthesis of Nanoparticles

Biosynthesis of some natural nanoparticles and then studding the effect of these nanoparticles on Gram positive bacterial growth in vitro and then in vivo by using the experimental animals such as rats.

Immunologically parameters

Finally studding of some immunologically parameters depending on isolated Gram positive bacteria.

7. Scope and limit to the research

Details of anticipated problems and proposed resolutions

لێرەدا باس لەو بەربەستانە دەکرێت کە دەشێت بێنە ڕێگای ئەنجامدانی توێژینەوەکە، هەروەها باس لە چارەسەری ئەو بەربەستانەش دەکرێت.

8. Duration and timeline

لێرەدا باس لە کاتی پێویست بۆ ئەنجامدانی توێژینەوەکە دەکرێت

1 year

9. Conclusions

The project supervisor summaries the research objectives and clarify their expected findings; include why the research has scientific value.

لێرەدا سەرپەرشتیار باس لە گرنگی ئامانج و دەرئەنجامە چاوەڕوانکراوەکانی توێژینەوەکە دەکات، هەروەها ڕوونی دەکاتەوە کە بۆچی ئاکامەکانی ئەم توێژینەوەیە بەهای زانستیی هەیە.

In Kurdistan region there is little is known about the Gram negative bacteria which isolated from different types of injuries and effect of natural nanoparticles to control the infections caused by these multi drug Gram negative bacteria.

10. References سەرچاوەکان

1. Bhattacharya D. and R. K. Gupta, "Nanotechnology and potential of microorganisms," *Critical Reviews in Biotechnology*, vol. 25, no. 4, pp. 199–204, 2005.

2. Goodsell D., *Bionanotechnology: Lessons from Nature*, Willey-Less, New Jersey, NJ, USA, 2004.

3. Paull R., J. Wolfe, P. Hébert, and M. Sinkula, "Investing in nanotechnology," *Nature Biotechnology*, vol. 21, no. 10, pp. 1144–1147, 2003.View at:

4. Salata O. V., “Applications of nanoparticles in biology and medicine,” *Journal of Nanobiotechnology*, vol. 2, no. 1, article 3, 2004.

5. Bekele, A. Z., Gokulan, K., Williams, K. M., and Khare, S. (). Dose and size-dependent antiviral effects of silver nanoparticles on feline calicivirus, a human norovirus surrogate. *Foodborne Pathog. Dis.* 2016; 13, 239–244. doi: 10.1089/fpd.2015.2054

;

11. General notes : هەر زانیارییەکی گشتی دیکە کە سەرپەرشتیار بە گرنگی بزانێت

12.

پەسەندکردنی پرۆپۆزەل لە لایەن لیژنەی زانستی بەش

ژمارەی کۆنووسی کۆبوونەوە:
رێکەوتی کۆبوونەوە:
بریار: پەسەند کرا ( ) پەسەند نەکرا ( )

ناوی سیانی و واژووی لیژنەی زانستی بەش

واژوو:
ناوی سەرۆکی لیژنەی زانستی بەش مۆری بەش

واژوو:
ناوی سەرۆکی بەش:

13.

پەسەندکردنی پرۆپۆزەل لە لایەن ئەنجومەنی کۆلێژ/فاکەڵتی

ژمارەی کۆنوسی کۆبوونەوە:
رێکەوتی کۆبوونەوە:
بریار: پەسەند کرا ( ) پەسەند نەکرا ( )

واژوو: ناو راگری کۆلێژ: مۆری کۆلێژ

تێبینی: تکایە فۆرمەکە تەنها بە یەك زمان (زمانی توێژینەوە) پڕ بکرێتەوە.