

الآية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ (1) خَلَقَ الْإِنْسَانَ مِنْ عَلَقٍ (2) اقْرَأْ
وَرَبُّكَ الْأَكْرَمُ (3) الَّذِي عَلَّمَ بِالْقَلَمِ (4) عَلَّمَ الْإِنْسَانَ مَا لَمْ يَعْلَمْ
(5)

سورة العلق: الآيات 1-5

صدق الله العظيم

DEDICATION

I dedicate this thesis to:

My Kind mother, father

Brothers, sisters,

Friends, colleagues and teachers

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ABSTRACT

Salmonellosis is one of the most frequent and widely distributed food-borne bacterial diseases constituting a major global public health problem. Poultry and eggs are considered major sources of *Salmonella*. The objective of this study was to detect *Salmonella* species in poultry and poultry products in Khartoum State. Samples of poultry and poultry products including; eggs, burger, sausage, kofta and chicken were collected from different sources in Khartoum State. The samples were cultured on bacteriological media for primary isolation of contaminants. *Salmonella* species were isolated and identified by colonial morphology, Gram's stain, biochemical tests and serological tests. Further investigation was done by real-time polymerase chain reaction. The results revealed that *Salmonella* spp. were detected in 63.6% and 74% when using conventional bacterial culturing method and RT-PCR respectively. The high percentage of *Salmonella* species was detected in kofta (19.2%), while the lowest percentage was detected in burger (12.4%). The predominant species of *Salmonella* is *Salmonella enterica*.

The study concluded that RT-PCR was rapid and suitable for the detection of *Salmonella* species in poultry and poultry products compared with conventional cultural methods. Further investigations are required to confirm these findings.

المستخلص

يعتبر مرض السالمونيلا من أهم الأمراض البكتيرية الناتجة عن تناول الأطعمة الأكثر شيوعا المنقولة للإنسان عن طريق الغذاء على نطاق واسع حيث أنه يسبب مشاكل كبيرة على الصحة العامة. ويعتبر الدجاج والبيض من أهم مصادر التلوث بهذا الميكروب.

هدفت هذه الدراسة الى الكشف عن أنواع السالمونيلا في الدواجن ومنتجاتها في ولاية الخرطوم. جمعت 250 عينة من الدواجن ومنتجاتها و كانت عبارة عن بيض وفراخ وسجوك وبيبرقر وكفتة فراخ من مصادر مختلفة في ولاية الخرطوم. تم تجهيز العينات وإجراء التحاليل لعزل الملوثات عن طريق التزريع بالطريقة التقليدية الروتينية في الأوساط الزراعية للباكتيريا. تم التعرف على أنواع السالمونيلا بواسطة الشكل الظاهري للمستعمرات وصباغة جرام والإختبارات الكيموحيوية والإختبارات المصلية وقد تم إجراء مزيداً من التحقيقات عن طريق تفاعل البلمرة المتسلسل.

أظهرت النتائج أن منتجات لحوم الدواجن كانت ملوثة بالأنواع المختلفة من السالمونيلا حيث بلغت نسبته 63.6% و 74% عند استخدام الطريقة التقليدية بإستخدام الأوساط الزرعية وطريقة تفاعل البلمرة المتسلسل على التوالي. وكان نوع سالمونيلا إنتريكا من أكثر الأنواع الموجودة.

كانت نسبة السالمونيلا عالياً في الكفتة بلغت 19.2% بينما كانت أقل في البيبرقر 12.4%.

خلصت الدراسة الي أن استخدام تفاعل البلمرة المتسلسل سريع ومناسب في الكشف عن السالمونيلا في الدواجن ومنتجاتها مقارنة مع الكشف بالطريقة التقليدية. مزيداً من الدراسة مطلوبة على نطاق واسع لتأكيد هذه النتائج.

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LIST OF ABBREVIATIONS

BAM	Bacteriological Analytical Manual
CDC	Centers for Disease Control and Prevention
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
HACCP	Hazard Analysis Critical Control Point
ISO	International Organization for Standardization
PCR	Polymerase chain reaction
R T- PCR	Real time polymerase chain reaction
QR T- PCR	Quantification Real time polymerase chainreaction
RV medium	Rappaport-Vassiliadis medium
SC broth	Selenite cystine broth
SDS	Sodium dodecyl sulfate
TSI agar	Triple sugar iron agar
USDA's	United States Department of Agriculture
USFDA	United States Food and Drug Administration
WHO	World Health Organization
XLD agar	Xylose lysine desoxycholate agar
SPIs	<i>Salmonella</i> Pathogenicity Islands
DNA	Deoxyribonucleic acid
MKTTn	Muller-Kauffmann Tetrathionate-Novobiocin
BS	Bismuth Sulphite agar,
RNA	Ribonucleic acid
mRNA	Messenger Ribonucleic acid
dNTPs	Deoxynucleotide Triphosphates
VP	Voges-Proskauer medium
TSI	Triple Sugar Iron agar
BPW	buffered peptone water

TT	Tetra thionate
NTS	non-typhoidal <i>Salmonella</i>
LPS	lipopolysaccharide.
Taq	Thermusaquaticus
bp	Base pair