College: Colleg of Veterinary **Name of Student: Roaa Abdullah Sabeeh**
Dep.: Microbiology **Name of Supervisor: prof. Dr.Bassam Y. Khudaier&Assist.prof.Dr. Mazin Nadhim mousa**

Certificate: master **Specialization: Microbiology**

Tital of Thesis

Molecular Characterization and synthesis of new hybrid antibiotic on Extended Spectrum *β*-lactamases (ESBL) in *E. coli* and K. *Pneumonia* isolated from Cattles and Patients.

Abstract of Thesis

Summary

This study aimed to determine the presence of the enzyme beta lactames in the bacterium *Escherichia coli* serotype *O157: H7* bacteria and *Klebsiella pneumonia* isolated from samples collected from Buffalo and cows, feces and urine of children and patientsDuring the period of seven months from October 2016 to May 2017, 299 samples were collected, 152(50.8%) human samples,of which 69 (45.4%) were from urine and 83 (54.6%) were from children suffering from diarrhea in hospitals in Al-Basra governorate. 147 (49.2%) samples were from fecal of animals, of which 82 (55.8%) samples were from buffalo and 65(44.2%) were from cow .A total of 101 *E. coli* serotype O157: isolates out of 299 were suspected *E. coli* analyzed 52/101 (34.2%%) were from human 16 (10.5%) samples were from urine and 36 (23.7%) samples were from stool . and 49/101(33.3%) were from animal 33(22.4%) samples were from buffalo and 16 (10.9%) samples were from cow . On the other hand 68(22.7%) isolates out of 299 were suspected *K. pneumoniae* analyzed 41/68 (27%)were from human 28/41(18.4%) isolates were from urine samples and 13/41 (8.6%) isolates were from stool samples and 27/68 (18.4%) were from animal 16 (10.9%) samples were from buffalo and 11(7.5%) samples were from cow).All suspected isolates were subjected to testing biochemical. It was found that 10 out of 101 were 4 isolates of animal faeces (2 buffalo and 2 cows).six isolates of 52 isolates (4 of the children's stool samples and 2 of the urine samples) 19.5% non-fermented sorbitol (NSFEC).The isolates were tested against 14 different antibiotics in the manner of spread of the disk to Kirby-Pour. All isolates were resistant to at least ten antibiotics, they showed the pattern of multiple resistance to antibiotics.Therefore, all these isolates were considered to be multidrug resistant. The isolates were tested against 14 different antibiotics in the manner of spread of the disk to Kirby-Pour. All isolates were resistant to at least ten antibiotics, ie they showed the pattern of multiple resistance to antibiotics .Isolates of E. coli isolates showed the O157: H7 form of the beta lactamase enzyme and 20 isolates of *K.pneumonia* for further study using two pairs of primers to test the polymer chain reaction of Imp, Int, Car. Results showed that 40% of isolates isolated from human (20%) of buffalo and cow buffalo isolates contain the gene, while 50% of *K.pneumonia* isolates contain an Imp gene and 30% of the isolates taken from buffalo stools, and the cows contain the Imp gene , And the results showed that 30% of the isolates E. coli isolated from the human contains the gene Car and (50%) of the isolates taken from buffalo stools and cows contain this gene, while for the isolates of *K.pneumonia* taken from human It was found that only 10% contain Car gene and only 10% of the isolates taken From buffalo stools, cows contain a Car gene.The results showed that 20% of isolates isolated from humans contain the Int gene and only 10% of the isolates obtained from buffalo and cow stools contain this gene. As for the isolates taken from humans, it was found that 10% Only contains the gene Int. As for the isolates taken from the buffalo stools, the cows did not contain any isolation containing the gene Int.Three compounds have been synthesized. We started with aniline, and then it is converted into acetanilide by acetylation reaction with acetic unhydride.The acetanilide then treated with chlorosulfonic acid to give the unstable sulfonyl chloride conjugate, which will be reacted with hydrazine hydrate.The hydrazine derivative of sulfonamide then converted into Schiff bases by reaction with substituted benzaldehyde.The Schiff base moiety then converted into the B- lactam by treating it with chloro acetyl chloride to obtain the required compoundThe chemical structure have been confirmed using the FT-IR and elemental microanalysis (C,H,N,S)The antimicrobial study has been

done for these compounds using disc diffusion method at different concentrations. The zone of inhibitions were measured and compared with the standard drugs.