

<i>University of Baghdad</i>				
College Name	<i>College of Medicine</i>			
Department	Microbiology			
Full name as written in passport	Aida Hussain Ibrahim			
e-mail				
Career	◉ Assistant Lecturer	◉ Lecturer	◉ Assistant Professor	◉ Professor
	◉ Master		◉ PhD	
Thesis Title	Experimental Study of <i>Pseudomonas aeruginosa</i> Proteases Isolated from Corneal Ulcer of Iraqi Patients and Their Role in the Treatment of <i>Staphylococcus aureus</i> Keratitis			
Year	2015			
Abstract	<p>One - hundred and twenty samples (corneal scraping) were collected from patients diagnosed to have microbial keratitis (corneal ulcer) who attended Ibn Al- Haitham Teaching Eye Hospital from the period between May 2013 and November 2013, <i>Pseudomonas aeruginosa</i> was reported 26 (21.6%) from the total cases. All bacterial isolates were diagnosed by conventional and biochemical tests, and confirmed by Vitek 2 Compact System.</p> <p>The role of proteases enzymes (Elastase (LasB), LasA, Alkaline protease and Protease IV) of <i>Pseudomonas aeruginosa</i> in the corneal ulcer was studied by using genetic and molecular biological method by real time PCR, and the results indicated that three bacterial isolates of <i>Pseudomonas aeruginosa</i> possessed elastase gene (<i>LasB</i>) (11.5%), and only one bacterial isolate of <i>Pseudomonas aeruginosa</i> harbored <i>LasA</i> protease gene (3.8%). All bacterial isolates of <i>Pseudomonas aeruginosa</i> were harbored <i>alkaline protease</i> gene (100%), and twenty bacterial isolates were harbored <i>protease IV</i> (76.9%).</p> <p>The results of real - time PCR analysis indicated that four bacterial isolates of <i>Pseudomonas aeruginosa</i> (15.3%) were harbored more than one gene of different proteases enzymes (elastase, alkaline protease, and protease IV).</p> <p>On the other hand our results showed that one bacterial isolates (3.8%) harbored both <i>LasA</i> protease and <i>alkaline protease</i> genes, and twenty bacterial isolates of <i>Pseudomonas aeruginosa</i> (76.9%) were harbored alkaline protease and protease IV genes.</p> <p>The <i>LasA</i> protease was extracted from <i>Pseudomonas aeruginosa</i> isolate by cooling centrifuge and precipitated supernatant by ammonium sulfate at saturation (80%). The</p>			

resulted extracted crude enzyme concentration was 60 µg/ml. Then the crude enzyme was partially purified by dialysis and gel filtration chromatography by using Sephadex G -100. The concentration of partial purified enzyme reached 40µg/ml.

III

Summary

The results of the experimental treatment of bacterial keratitis (*in vivo*) of infected eyes rabbits caused by Methicillin Sensitive *Staphylococcus aureus* showed that the efficacy of LasA protease was effective as Lysostaphin in eradicating Methicillin Sensitive *Staphylococcus aureus* from the infected corneas after approximately 15 h after giving the drug at dose 100 µl (concentration 1µg / ml) . While Vancomycin gave us very little potency in eradicating *S. aureus* from corneas in comparison with potency of LasA protease and Lysostaphin during this time but showed good potency very late approximately after 3 days of application of treatment.

The results of the experimental treatment *in vitro* (in the test tube) that is caused by Methicillin Sensitive *Staphylococcus aureus* showed that the efficacy of LasA protease was similar to that of Lysostaphin drug in the killing of Methicillin Sensitive *Staphylococcus aureus* in the bacterial broth.