

**DETECTION OF HEMOLYSIN AND GELATINASE AMONG CLINICAL ISOLATES OF
PSEUDOMONAS AERUGINOSA**

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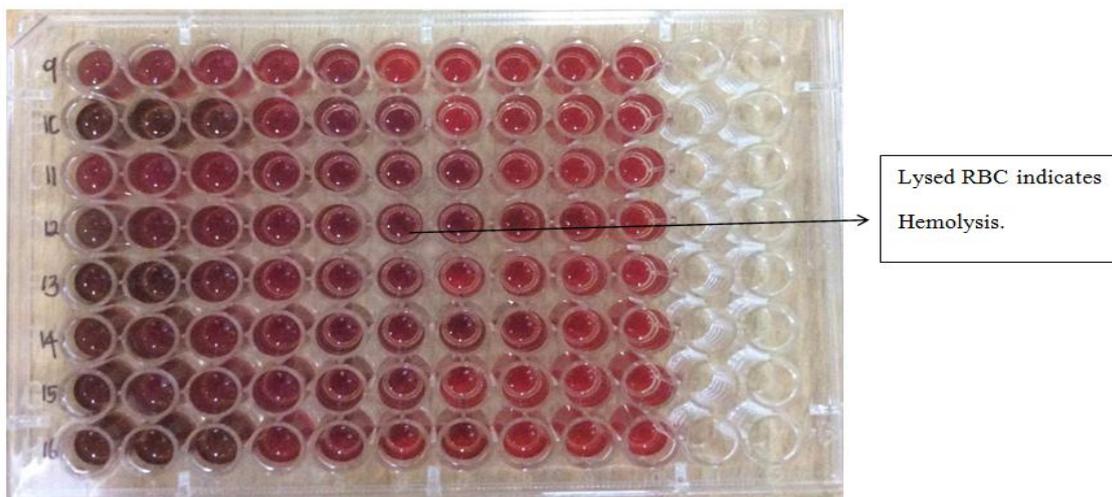
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Dear Editor

P. aeruginosa is one of the most important opportunistic bacterial pathogen. It is the leading cause of nosocomial infections especially in debilitated individuals.^[1] It is the most frequently encountered pathogen among other non-fermentative gram negative bacteria isolated from hospital environment.^[2] Infections caused by this pathogen are often troublesome due to its array of virulence, intrinsic and acquired antibiotic resistant mechanisms which eventually diminish the choices of antibiotics for the effective management of patient's outcome, which lead to the significant morbidity and mortality in such patients.^[3] Hemolysin are extracellular toxic proteanaceous enzyme produced by several gram negative bacteria such as *E. coli*, *serattia* spp, *proteus* spp, *vibrio* spp, *pasteurella* spp, *P. aeruginosa*. Most of the hemolysins cause lysis of erythrocytes by forming pores of varying diameters in the cellular membrane. Some hemolysins can also attack the other mammalian cells. As they also have ability to degrade other cells, it is known as cytolysins.^[4] Gelatinase is a member of metallo proteinases capable of hydrolyzing a number of proteinaceous biological compounds such as gelatin, collagen, casein, hemoglobin and other bioactive peptides.^[5] Thus, we have taken this objective to determine the antibiotic resistant patter and its virulence factors such as hemolysin and gelatinase in our *P. aeruginosa* isolates. A sum of 20 clinical isolates of *P. aeruginosa* were obtained from different clinical specimens. In which, 9/20 (45%) isolates were from sputum, 5/20 (25%) from blood, 3/20 (15%) from urine and 3/20 (15%) from pus. These isolates were characterized by standard biochemical tests and processed for the study. All isolates were subjected for antibiotic sensitivity testing by kiry bauer disc diffusion method as per CLSI guidelines.^[6] The antibiotics includes piperracillin-tazobactam, cefotaxime, ceftazidime, tetracycline, cotrimoxazole, aztreonam, gentamicin and imipenem (HiMedia, Mumbai). We have observed an increased percentage of isolates were shown to be resistant to most of the routinely used antibiotics. Only 2/20 (10%) isolates showed sensitivity to imipenem. Other than that, for all other antibiotics tested to the isolates showed complete resistance 20/20 (100%). Detection of hemolysin^[7] was performed by dilution method and gelatinase by plate method^[8]. We have observed that, 18/20 (90%) of isolates were shown to be hemolysin producers at 1:80, 1/20 (5%) was at 1:40 and 1/20 (5%) at 1:1280 dilutions (Picture 1). 6/20 (30%) of our isolates were found to produce gelatinase. The detailed results were depicted in table 1. Johnson and coworkers in 1978 suggested that hemolysin produced by *P. aeruginosa* playing a role in the pathogenesis of causing ocular infections.^[9] Different scientist have reported the role of hemolysin produced by *E. coli* in its pathogenicity. Using mouse model, the nephropathogenicity of non-hemolytic avirulent *E. coli* strain was increased after injection of hemolysin.^[10] The pathogenicity of our isolates may also due to the production of hemolysin. Kanemitsu et al. in 2001 shown that gelatinase producing bacteria can trigger inflammation and it has been sown to contribute to the virulence in human and animal models.^[11] We conclude that as our isolates produced these two virulent determinants, this may be involved in the triggering and establishment of infections in susceptible hosts. Further study needs to be conducted with more number of samples and extensive molecular related studies have to be performed in order to determine its actual mechanism in relation with infection.



Picture. 1: Representative picture showing the hemolysin production by *P. aeruginosa*.

Table. 1: Results of hemolysin and gelatinase production by *P. aeruginosa* isolates.

No of E.coli isolates	Hemolysin (in dilution)	Gelatinase
1	1:80	+
2	1:80	-
3	1:80	-
4	1:80	-
5	1:80	+
6	1:80	+
7	1:80	+
8	1:80	-
9	1:80	-
10	1:80	-
11	1:40	-
12	1:1280	+
13	1:80	+
14	1:80	-
15	1:80	-
16	1:80	-
17	1:80	-
18	1:80	-
19	1:80	-
20	1:80	-

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