

ESTIMATION OF SOME PLANT EXTRACT ACTIVITY AGAINST BACTERIAL CYSTITIS PRODUCED BY URINARY TRACT INFECTION FROM HOLLY KERBALA PROVINCE

Azal A. Al-Rubaeae*, Zahraa Ch. Hameed, Sara Al-Tamemi and Nora J. Hintaw

Department of Pathological Analysis Techniques, Al-Safwa University College, Kerbala, Iraq.

*e-mail: hymnsrain22@gmail.com

(Received 14 February 2019, Revised 10 April 2019, Accepted 27 June 2019)

ABSTRACT : In this study, a total of 60 urine samples were obtained from patients suffering from urinary tract infection, who are admitted to Al-Hussein Teaching Hospital, at the period from December to February 2018-2019. Urine sample was collected for culturing and submitted to crystal formation. Out of the 60 samples only 57(95%) on culture a isolated from Urinary tract infection with different causes. The results isolation and laboratory diagnosis as well as biochemical test approved that there are *Staphylococcus saprophyticus*, *Streptococcus agalactiae*, *Escherichia coli*, *Klebsiella pneumonia*, *Proteus spp.*, *Morganella morgani* and *Pseudomonas aueruginosa* identified in this study, *Staphylococcus saprophyticus* is the ore predominant in UTIs infection at the rate 21% according to our result, while *Morganella morganii* is the lower results 8% due to their rare existing. The isolates are varied in their ability to produce urease enzyme and stone (cast) they were varied in their hemolytic activity. Isolates that able to produce urease in different level which provided as main step in pathogenesis in urinary tract infectionsand cast formation. *Zea mays*, curcumine and canberry were shown very high effectively to inhibit stone in the percent of (11, 13, 12) respectively coffee and *Ziziphus* gave results variedin their activity.

Key words : UTIS, cystitis, *M. morganii*, plant extract.

INTRODUCTION

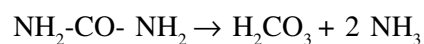
Urease production is considered as an important virulence factor in bacterial pathogenicity because urease material elevated the pH due to the ammonia generated by this enzyme has important ramifications for medicine. Urease is a virulence factor in pathogenic bacteria that cause gastric ulceration, urinary stone formation, pyelonephritis and other human health –related problems (Kwiecinska-Pirgo *et al*, 2014).

Thereby provides an easily assimilated nitrogen source for the organism. Urease acts as a virulence factor for uropathogenic bacteria. Thus producing alkaline conditions in the urinary tract. Increased urine, thus pH can lead to the formation of struvite stones that harbor the infecting organism, enhanced attachment of bacteria to the renal epithelium, direct renal tissue damage, in activation of certain antibiotics (Li *et al*, 2004).

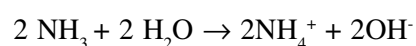
Most urinary stones are not homogenous in terms of their chemical composition since they are a mixture of compounds de-positated due to metabolic disorders and infections. Diverse composition of the stones may result from the fact that urolithiasis promotes the development of infections and bacteria easily colonize porous stone

surfaces (Doyle *et al*, 2002).

Struvite stones are also referred to as ‘infection stones’ and ‘triple phosphate stones’. Struvite stone formation can be sustained only when ammonia production is increased and the urine pH is elevated to decrease the solubility of phosphate. Both of these requirements can occur only when urine is infected with a urease-producing organism such as *Proteus*. Urease metabolizes urea into ammonia and carbon dioxide: $\text{Urea} \rightarrow 2\text{NH}_3 + \text{CO}_2$. The ammonia/ammonium buffer pair has a pK of 9.0, resulting in the combination of highly alkaline urine rich in ammonia. Urease splits urea into ammonia and carbonic acid:



Ammonia then mixes with water to produce ammonium hydroxide and under these alkaline conditions, carbonic acid moves toward bicarbonate and carbonate ions.



Thus, the alkalisation of urine by the urease reaction causes the formation of NH_4^+ , which favours the formation of carbonate ions (CO_3^{2-}) and trivalent phosphate ions (PO_4^{3-}). This in turn causes struvite and carbonate apatite formation (Sun *et al*, 2010).