

## **Urinary Enzymes and Microalbuminuria as Indicators of Renal Nephropathy in Saudi Patients**

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*Abstract.* In the current work we tried to investigate some new biochemical markers in the urine of kidney patients, kidney transplant recipients and control subjects of the Saudi population, such markers are N-acetyl- $\beta$ -D-glucosaminidase (NAG), Alkaline Phosphatase (ALP), Alanine Aminopeptidase (AAP) as well as microalbuminuria. Kidney patients, males and females, age ranged from 16-85 years, and kidney transplant recipients, male and female, age ranged from 18-75 years.

Results from control subjects showed a slight elevation of total urinary protein and NAG in females. This may be due to the higher level of creatinine concentration in male subjects, that would result in lower protein concentration and NAG activity when expressed in terms of creatinine. Microalbuminuria, glucose and pH results were in close agreement with the published data and no sex differences were recorded when compared with the males. There were statistically significant differences in most of parameters investigated between kidney patients and the normal population except for glucose level and pH value. The reduction in creatinine concentration may reflect changes in the glomerular filtration rate (GRF). Higher levels of urinary NAG activity were associated with high microalbuminuria and raised AAP levels.

Increase urinary NAG predominantly reflects decreased renal function and tubular damage. ALP increased levels reflect a lesion of the proximal convoluted tubules and/or intensive degeneration of the tubular epithelial cells. The increase in NAG activity correlates well with urinary protein and may indicate an increase in activity of renal tubular cells. Kidney transplant recipients showed a significant increase in NAG, ALP and AAP enzymes compared to control subjects. The marked increase in most parameters may indicate that patients are in an immediate functioning graft.