Impact of Celecoxib on Serum Creatinine along with Beneficial Effects of Lycopene on Albino Rats; an Observational Study

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ABSTRACT

Objective: To assess the impact of celebrex on serum creatinine with augmentation by lycopene.

Study design: observational study.

Place of study: Animal House, JPMC, Karachi.


Materials and Methods: Forty fully-grown male Albino rats of 200-220gm weight and 3-4 months old were reserved for this study and separated into 4 groups, control was selected as A1, In A2 50 mg/kg Celebrex was given by oral route, In A3 50 mg/kg Celebrex was given by oral route along with lycopene and In A4 50mg/kg lycopene was given by oral route. At completion of experimental study, all animals were dissected and preserved.

Results: In A2 animals serum creatinine level was significantly elevated, however level was improved in A3 animal group.

Conclusion: Experiment discloses that lycopene improve the raised serum levels of A2.

Keywords: Celebrex, GI adversity, cyclooxygenase, PG.

INTRODUCTION

They are frequently used medications in senior citizens with various comorbidities. Unnecessary usage of NSAIDs can adversely affected CVS & kidney function and make complications in it because it disturbs the steadiness of vasodilators and vasoconstrictors mechanisms of renin-angiotensin system. It effects on kidney and causes interstitial nephritis, lipid peroxidation and focal necrotic changes in renal tubules. DNA damage followed by un-controlled cell proliferation.1,2,3

Discriminatory NSAIDs which are called COX-2 inhibitors have same painkiller properties like NSAIDs however they have least side effects. They ensure pharmacological prevention of PG synthesis by deterring inflammatory COX-2 enzymes only so as to reduce COX-1- intervened side effect e.g platelet dysfunction and GI bleeding.4,5,6 It abstemiously revert the reproductive defects, neurobehavioral insufficiencies and had anticancceros activities thru pharmaceutical prevention of enzyme COX-2 but it causes renal disfunction.5,6,7 Celebrex suppresses COX-2 because COX-2 is overexpressed in malignancies and stimulates angiogenesis, immunosuppression and cell division, so it diminishes proliferation of malignant cells and act as an anticancceros agent.6,9,10

Lycopene is a noncyclic rosy carotenoid pigment and phytochemical compound which is insoluble in water. It is present in asparagus, parsley, Momordica cochinchenesis, Spreng fruit, papayas, tomatoes, watermelons, apricots and vegetables.11 It is preventive against lipid, protein, and DNA oxidation. It can go through oxidative, thermal and photo degradative, so it is 100 times more chemopreventive against various types of cancers and renal impairment.12,13 It keeps strong antioxidant, antiautopagic, and antipalliative properties and defends cells beside injury due to reactive oxygen species. It is more effective as compared to β-carotene and vit E because it contain numerous conjugated double bonds.14,15,16 It has the utmost singlet oxygen-quenching capability in all types of carotenoids and ability to decrease the risk of prostate cancer, uterine and liver cancers, Alzheimer’s disease, and cardio-vascular diseases.17,18,19 It prevents process of ageing, cell membrane lipid peroxidation and DNA impairment.20,21

In the prevailing time period, any study regarding the impact of celebrex on serum creatinine with augmentation by lycopene didn’t came in notice, thus this study is planned and we also relate the outcomes with preceding researches.

MATERIAL AND METHODS

Experimental procedure was permitted by the Animal Care unit of BMSI and 40 Adult masculine rats were retained in coops underneath proper temperature and aeration for a week on standard rat food. Subsequently after a week they were arbitrarily separated into four groups.

Ia: healthy set
Il: Celebrex 50 mg/kg by oral route. (Unhealthy set)
IIIa: Celebrex with lycopene 50 mg/kg by oral route.
IVa: Lycopene 50 mg/kg by oral route.

Rats were sedated and blood were taken by cardiac puncture for serum creatinine assessment. Creatinine assessment was accomplished by Cat No 3LB1-22, 3LB1-32 and 3LB1-41 reagent kits.

RESULTS

Ia: These healthy animals were stayed in their best of fitness. Their eating behaviors and reaction to impetus were suitable till the termination of study. The mean assessment of serum creatinine level in set Ia was 0.54±0.01.

Il: These animals were appearing diseased, languid and slothful. Their eating habits became minimize and reaction was sluggish. The mean assessment of serum creatinine level in set Il was 1.14±0.09. There was a highly noteworthy upsurgence (P<0.001) was perceived in the serum creatinine level in set Il, when linked with set Ia. (Table-A, Figure- A)

IIIa: Animals of this set was relatively prospering and energetic in comparison with Il. Their eating habits were usual. The mean assessment of serum creatinine level in IIIa was 0.59±0.02. A noteworthy upsurgence (P<0.05) was perceived in the mean value of serum creatinine level in IIIa, when linked with set Ia.

An extremely noteworthy reduction (P<0.001) was perceived in the mean assessment of serum creatinine level in IIIa, as compare to IIa. (Table-A, Figure- A)

IVa: The consequences of set IVa were analogous to set Ia.

Table-A: Mean Assessment Of Serum Levels Of Creatinine (Mg/Dl) In Numerous Groups Of Albino Rats

<table>
<thead>
<tr>
<th>Groups</th>
<th>Management given</th>
<th>Serum level of creatinine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia (n:10)</td>
<td>ND</td>
<td>0.54±0.01</td>
</tr>
<tr>
<td>Ila (n:10)</td>
<td>Celecoxib</td>
<td>1.14±0.09</td>
</tr>
<tr>
<td>IIIa (n:10)</td>
<td>Celecoxib + Lycopene</td>
<td>0.59±0.02</td>
</tr>
</tbody>
</table>

Mean±SEM

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Arithmetical assessment of the dissimilarities in the serum levels of creatinine in Albino rat groups.

<table>
<thead>
<tr>
<th>Arithmetical assessment</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>lll vs. ll</td>
<td>P=0.001****</td>
</tr>
<tr>
<td>lll vs. l</td>
<td>P=0.05*</td>
</tr>
<tr>
<td>lll vs. lla</td>
<td>P=0.001****</td>
</tr>
</tbody>
</table>

Key:
- Non-significant*
- Significant**
- Moderately significant***
- Highly significant****

Figure A:

### DISCUSSION

NSAIDs are the internationally taken drugs burden mainly for old age patients, having some comorbidities. It signifies an auspicious circumstances for the inception of harmful effects caused by NSAIDs such as acute or chronic kidney damage. COX-2 inhibitors, like Celebrex, have same pain relieving effects, which are comparable with NSAIDs, however they have least harmful effects like platelet dysfunction and GI bleeding.

Lycopene is chemically a red noncyclic carotenoid phyto-chemical medicine, which is commonly used as an antioxidant and insoluble in water. It is present in asparagus, parsley, tomato puree, watermelons, apricots and vegetables. It plays a key role in the inhibition of lipid, protein, and DNA oxidation by undergoing oxidative, thermal and photo-degradation. It is 100 times more effective as compare to vit E, so it improves chemotherapeutic persuaded nephrotoxicity, neurotoxicity, hepatic injury. It is also an antioxidant and antiapoptotic agent.

Illa animals were looking diseased, languid and slothful and there was a highly noteworthy upsurge was perceived in the serum creatinine level. Similar outcomes were observed by 7,8. Illa animals were looking active and an extremely noteworthy reduction was perceived in the mean assay of serum creatinine level. Similar outcomes were observed by 13,15,21.

### CONCLUSION

Investigation resolute that set II animals had noteworthy upsurge in serum creatinine level while III animals showed an extremely noteworthy reduction in serum creatinine level. So our construal from this research is that please avoid using unnecessary painkillers and if mandatory use it with lycopene, in order to decrease harmful effects.

Conflict of Interest: no conflict.

### REFERENCES