RESULTS
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The present work was done on experimental renal hypertension produced in adult male conscious rabbits to evaluate the contribution and interaction of different vasoactive principles derived from mast cells.

1. Measurement of blood pressure in experimental and sham operated rabbits.

Blood pressure was measured on day 7, 14 and 21 in sham operated as well as in hypertensive rabbits following production of hypertension by renal artery ligation on day 0. Results are presented in Table-1.

The systolic blood pressure in experimental group was found to be increased about 39% \((p < 0.001)\) on day 7 as compared to that of control group. The rate of increase was remained almost steady afterwards. On day 14, blood pressure increased by 47% \((p < 0.001)\) and on day 21, it increased about 49% \((p < 0.001)\) in comparison to the corresponding sham operated control group. Results are also presented in Fig. 2A in bar diagramatic form.

Diastolic pressure in experimental group was found to be increased marginally about 7% \((p < 0.05)\) in comparison to sham operated control group and it remained almost same in all three sets of experiments (Fig. 2B).

2. Determination of mast cell population.

Table 2 represent the mast cell population in different perivascular tissues like kidney, lung, spleen...
mesentery and expressed as cells per square millimeter of tissue.

In kidney cortical tissue (Fig 3A) mast cell population was increased by 14% (P 70.05) in respect of the control group on day 7; However, number of mast cells (per sq.mm of tissue) increased by 54% (p<0.001) and 45% (p<0.05) on 14th and 21st day after production of experimental hypertension.

Fig 3B showed mast cell population in kidney medullary tissue, experimental group showed increased by 13% on day 7th day after production of hypertension in comparison to the control group. The result is not statistically significant (p>0.05). Number of mast cells was found to be increased about 50% (p<0.05) and 45% (p<0.05) on day 14 and 21 following production of hypertension respectively with respect to their control (sham operated) group.

Fig 3C showed mast cell population in lung tissue of experimental and sham operated control group. Experimental group showed 25% (p<0.05) increase in mast cell population on both 7 and 21 days after hypertension production in respect to their control group. But mast cell population increased by 50% (p<0.05) in hypertensive group on 14th day after production of hypertension in comparison to the sham operated control group.
In spleen tissue (Fig 3D) mast cell population in the experimental group decreased by 25% (p<0.05) on day 7, followed by 11% (p>0.05) increase on day 14 and again the number of mast cells per square mm. showed insignificant change (p>0.05) on day 21 following production of hypertension in comparison to their corresponding control group.

Fig 3E showed mast cell population in mesentery of experimental group as compared with those of Sham operated control group. On day 7 and 21 of study it showed insignificant alteration, (p>0.05). However, number of mast cells was found to be increased about 50% (p<0.001) in experimental group on 14 after hypertension production in respect to the control group.

3. Estimation of histamine concentration.
The histamine concentration in serum and in different peri-vascular tissues like kidney, lung, spleen and mesentery in experimentally produced hypertensive rabbits and sham operated control rabbits was estimated and represented graphically as follows:

Serum histamine level (Fig. 4A) increased 17% in experimental group with respect to the control group at day 7(p> 0.05). But histamine level increases drastically about
1.8 fold (p<0.001) and 1.3fold (p<0.001) at day 14 and 21 respectively in experimentally induced hypertensive rabbits in comparison to control group.

In kidney contical tissue histamine concentration was increased only about 7%(p>0.05) in experimental than that of control group on day 7 which is followed by a sharp rise in histamine content about 2 fold (p<0.001) and 53% (p<0.001) on day 14 and 21 respectively in experimentally produce hypertensive rabbits than that of sham operated control rabbits (fig '4B).

Histamine content in kidney medullary tissue (fig., 4C) of experimentally produced hypertensive group showed in significant variation on day 7 (p>0.05) with respect to the sham operated control group. But its level increased by 3 fold on day 14 (p<0.001) and also increase about 88% (p<0.001) on day 21 in hypertensive group in respect to the control group.

Histamine content in lung tissue of hypertensive rabbits was measured and the values were compared to that of sham operated groups. Results presented in fig 4D. It is evident that, histamine content in lung tissue of experimentally produced hypertensive rabbits was increased by 25% (p<0.05) on day 7, as compared to that of sham operated
groups. On day 14 and 21 following hypertension production the histamine level is increased by about 3 fold (p<0.001) and 1.7 fold (p<0.001) respective in respect to the control group.

Histamine concentration in spleen tissue of hypertensive rabbits was estimated and compared with that of sham operated control group. Results presented in fig. 4E. It is evident that histamine level is increased in hypertensive group by 2 fold (p<0.001) on day 7 following production of hypertension as compared with the control group. On day 14 and 21 following production of hypertension, the histamine level is found to increase by about 3 fold (p<0.001) and about 1.7 fold (p<0.001) respectively.

Histamine level in mesentery (fig 4F) is found to increase about 2 fold on 7 days after production of hypertension in hypertensive rabbits as compared to that of sham operated control group. The increase is statistically significant (p<0.001). On day 14 and 21 following production of hypertension the histamine level in experimental group of rabbits is found to be increased by 5 fold (p<0.001) and 2 fold (p<0.001) respectively.

4. Estimation of serotonin concentration

Serotonin concentration in serum and different perivascular tissues of hypertensive and sham operated
control group of rabbits were measured on day 7, 14 and 21 following production of experimental hypertensive and represented graphically.

Serotonin concentration in serum (Fig. 5A) was found to increase by about 5 fold on 7 days following production of hypertensive in experimental group of rabbits in comparison that of sham operated group. (p<0.001).

The result is found to be statistically significant (p<0.001) On 14 and 21 day following production of hypertension, the increase is however, found to be about 43% (p>0.05) and 43% (p>0.05) respectively.

Serotonin concentration in kidney cortical tissue of hypertensive (fig. 5B) as compared to that of corresponding sham operated group show only marginal alteration on 7 days and 14 days after production of hypertension. The results are not found to be statistically significant (p>0.05). The serotonin level in kidney cortical tissue of rabbits is however found to be increased by about 2 fold (p<0.01) on 21 day following production of hypertension.

In kidney medullary tissue of hypertensive rabbits (Fig 5C) concentration is however, found to be increased on
day 7, 40% (p<0.01) as compared to the sham operated control group. On day 14 following production of hypertension, the serotonin level is increased by about 35% (p<0.01) and on day 21, the serotonin concentration in kidney medullary tissue of experimentally hypertensive rabbits is found to be reduced by about 36% (p<0.001) as compared to that of corresponding sham operated control group.

The serotonin concentration in lung tissue of hypertensive rabbits (Fig 5D) is found to be increased sharply by about 5 fold (p<0.001) on day 7 following production of experimental hypertension as compared to the corresponding sham operated control group. The rate increase is about 66% (p<0.001) and 79% (p<0.001) on 14 and 21 days following production of hypertension in experimental group of rabbits with respect to that corresponding sham operated group respectively.

In spleen tissue of experimentally hypertensive rabbits (Fig. 5E) serotonin concentration on day 7 and 14 remains almost same as compared to that of corresponding sham operated control group and the result is not found statistically significant (p>0.05). However, serotonin concentration in spleen tissue is found to be reduced significantly following production of experimental hypertension.
Fig. 5F shows the serotonin concentration in mesentery of experimentally hypertensive rabbits as well as corresponding sham operated control groups on day 7, 14 and 21 following production of hypertension. It is evident that, serotonin concentration in mesentery of hypertensive rabbits is increased by almost 4 fold ($p<0.001$), 2 fold on day 7 and 14 ($p<0.001$) and decreased by 36% ($P<0.001$) on day 21 respectively as compared to that of sham operated group.

5. Estimation of heparin concentration.

Heparin content is estimated in serum and in perivascular tissues like kidney, lung, spleen and mesentery of experimentally produced hypertensive rabbits as well as sham control rabbits.

Fig. 6A shows heparin level in serum. Heparin level is found to be increased in hypertensive group following production of hypertension of about 70% on day 7 ($p<0.001$), about 46% ($p<0.001$) on day 14 and 20% ($p<0.05$) on day 21 with respect to the control group.

Heparin concentration in kidney cortical tissue is represented in fig. 6B. On day 7, following hypertension production heparin concentration increased by 2 fold ($p<0.001$) in hypertensive group in comparison to control
Heparin content also found to be increased by 16% and 10% in hypertensive group with respect to control group on day 14 and 21 respectively (p<0.05).

Fig. 6C represent heparin concentration in kidney modullary tissue heparin concentration is found to be increase by about 12% (p<0.05) in hypertensive group in comparison to the control group after production of hypertension. This is followed by insignificant (p>0.05) alteration in heparin concentration upto 21 days.

In lung tissue (fig. 6D) heparin level increased by 2 fold (p<0.001) in hypertensive rabbits in comparison to control rabbits on day 7 following production of hypertension. Heparin level found to be increased by 40% (p<0.001) on day 14 in the experimentally produced hypertensive rabbits as that of control rabbits but on day 21 only marginal alteration in heparin level has been noticed.

In spleen tissue (fig. 6E), a 39% rise is found in heparin level (p<0.001) on day 7 in experimentally produced hypertensive group than of control group following production of hypertension. No significant alteration has been noticed in heparin level on day 14 and 21.
Fig. 6F represent the heparin content of mesentery. It is evident from the results that heparin level increased by about 51% (p<0.001) in hypertensive group in comparison to the control group on day 7 followed by a significant decrease of about 22% (p<0.001) and 31% (p<0.001) on day 14 and 21 respectively in hypertensive rabbits with respect to control rabbits after production of hypertension.


Noradrenaline content as measured in serum and in different perivascular tissues like kidney, lung, spleen and mesentery in experimentally produced hypertensive as well as in sham operated control rabbits. Results were expressed in µg/gm of tissue.

In kidney cortical tissue (Fig. 7B) noradrenaline level is increased by 2 fold on day 7 in hypertensive group in respect to control group (p<0.001). Noradrenaline level increased about 30% (p<0.001) and 35% (p<0.001) in hypertensive group following hypertensive production on day 14 and 21 in comparison to the control group respectively.

Kidney medullary tissue (fig 7C) represents a increased noradrenaline level in hypertensive group about 2 fold on day 7 (p<0.001), 12% (p<0.01) on day 14 and 40% (p<0.001) on day 21 in comparison to the control group following production of hypertension.
Noradrenaline level in lung (fig 7D) is found to be increased in hypertensive group about 3 fold (p<0.001) on day 7 and 8 fold (p<0.001) on day 21 with respect to the control group.

Fig. 7E shows noradrenaline level in spleen. Noradrenaline level is found to be increased by 7 fold (p<0.001) on day 7, by 32% (p<0.001) on day 14 and by 2 fold on day 21 in hypertensive group with respect to the control group after production of hypertension.

Fig. 7F shows noradrenaline level in mesentery of experimentally hypertensive group as well as corresponding control group. It is evident that noradrenaline level increased in hypertensive group by about 2.5 fold (p<0.001) on day 7, 65% (p<0.01) on day 14, and about 70% on day 21 as compared to that of sham operated control group.
Determination of diamine oxidase level in serum and different perivascular tissues of experimental hypertensive and sham operated control rabbits.

Diamine oxidase (DAO) level (P.U.) in serum and different perivascular tissues (like kidney cortex, kidney medulla, lung, spleen and mesentery) of hypertensive and sham operated (control) rabbits was evaluated. Results are presented in Table 3. It is evident that, DAO level in serum increased significantly (p<0.005) throughout the experimental period following production of hypertension in hypertensive rabbits as compared to the corresponding sham operated control group. Thus, the increase in DAO level becomes 66% (p<0.005), 78% (p<0.005) and 50% (p<0.005) on day 7, 14 and 21 following production of hypertension respectively. Diamine Oxidase level in kidney cortex also showed an increase on day 7 following production of experimental hypertension in hypertensive rabbits as compared to the sham operated control group. The marked by elevated level of DAO is found on 14 and 21 day following production of hypertension . Thus, DAO level is increased by 58% (p<0.005), 50% (p<0.005) and 53% (p<0.005) on day 7, 14 and 21 following hypertension respectively.

In kidney medulla DAO level is found to be increased by 43% (p<0.005) on 7 day following production of hypertension in rabbits as compared to the sham operated
control group. After that, on day 14 and day 21 following production of hypertension in the rabbits, the DAO level increased by 11% (p<0.01) and 39% (p<0.005) respectively.

In long tissues, only marginal increase in DAO level is demonstrated in hypertensive rabbits on 7 and 14 days following production of hypertension as compared to the corresponding sham operated groups. Diamine Oxidase level however, increased by 38% (p<0.005) on 21 days after production of hypertension.

Diamine Oxidase level in spleen is increased by almost 2 fold (p<0.005) on 7 days. However, on 14 and 21 day after production of hypertension, the DAO level is increase only by 8% (p>0.005) and 20% (p<0.05) respectively.

In mesentery, DAO level increased by 45% (p<0.005) on day 7. However on day 14 and 21 day after production of hypertension the increase in DAO level is only marginal and not found statistically significant (p>0.05).

Serum triglyceride level (Fig - 8) is found to be increased significantly throughout the experimental period in respect to their corresponding control group whereas serum cholesterol level (Fig 9) is found to be increased significantly on day 7 and it showed insignificant change on day 14 and 21 day of study in respect to the control group.