CHAPTER VI

SUMMARY AND CONCLUSIONS
1. The present study was undertaken to investigate the effect of naloxone on renal function in hemorrhagic shock, and to compare its efficacy with clinically used drugs like noradrenaline and dopamine.

2. The animal model was prepared by inducing hemorrhage from the femoral artery of anaesthetised mongrel dog using constant pressure technique. The blood loss was adjusted in such a way that mean arterial pressure was maintained at 45 mmHg pressure for one hour.

3. In all the animals cardiovascular status was studied by recording the MAP and heart rate; renal function by investigating inulin clearance, PAH clearance, urine flow and excretory rate of sodium; metabolic status by estimating, lactate, PH, PCO₂, PO₂, HCO₃⁻, serum Na⁺ and K⁺. Angiohistopathological study of the kidney was carried out by injecting India ink through renal artery after one hour of treatment with
different drugs.

4. Animals were divided into 5 groups: one acted as a control group, wherein only normal saline (0.5 ml/min) was given. In the other groups, naloxone (1 and 2 mg/kg), noradrenaline (2 μg/kg/min) and dopamine (10 μg/kg/min) were administered. Survival rate was noted for animals randomly selected from each group.

5. There was no significant difference between groups in any of the parameters measured during the baseline period of observation and during the period of hemorrhage (when the MAP was kept at 45 mmHg for one hour).

6. The control group of animals showed cardiovascular deterioration, anuria as well as acidosis and died within two hours after hemorrhage.

7. Single bolus administration of naloxone improved the cardiovascular status as shown by significant improvement in the MAP without any increase in the heart rate. All the parameters of renal function which were seen depressed during hemorrhage improved significantly. Angiohistopathological study of the kidney revealed partial
patency of the majority of the glomeruli in the cortical region by showing the presence of India ink. There was significant reversal of metabolic acidosis, after naloxone administration. All the animals treated with naloxone (1mg/kg) and re-infused with the shed blood survived for seven days (survival rate: 100 per cent).

8. Infusion of noradrenaline for one hour increased the MAP and heart rate significantly. Renal function and metabolic acidosis deteriorated further. Angiohistopathological study of the kidney after noradrenaline treatment showed only a very few glomeruli having India ink. Survival rate was only 40 per cent.

9. Infusion of dopamine for one hour, even though increased the MAP and heart rate; there was complete anuria in all the animals during the treatment. However, metabolic acidosis persisted. Angiohistopathological study of the kidney after dopamine infusion showed India ink in few glomeruli. Survival rate in this group was only 20 per cent.
10. Clinical relevance of these findings are far reaching and naloxone may be used as a better adjunct to blood transfusion, when compared with noradrenaline and dopamine.

11. Naloxone appears to be the most promising pharmacological agent for clinical use in shock.

12. Controlled, randomized, well designed clinical trials may help in confirming the utility of this opioid receptor antagonist in hemorrhagic shock.