

## CHAPTER V



## SUMMARY AND CONCLUSION

1. Capsaicin, at the concentrations of 10 and 20  $\mu\text{g/ml}$ , was found to depress the rate and contractile force of isolated rat atria. The effect on rate was more prominent than the effect on force.
2. The effect on rate included negative chronotropism and arrhythmogenesis, which consistently terminated with complete cessation of heartbeat. This response was not tachyphylactic.
3. Neither atropine nor calcium chloride prevented or attenuated capsaicin effect on the rate.
4. With the capsaicin-induced, non-beating atria normal and regular beat was restored by washing the atria repeatedly with capsaicin-free medium, or by additions of catecholamines, or by electrical stimulation.
5. Of the three catecholamines employed namely, isoproterenol, epinephrine and norepinephrine, the most and least potent amines in antagonizing capsaicin action were isoproterenol and norepinephrine respectively. This antagonistic effect of the catecholamines was abolished by propranolol.
6. The depressive effect of capsaicin on isometric tension by electrically paced left atria was reversed by catecholamines or calcium chloride.
7. The effect of methyl capsaicin on the rate by isolated rat atria was similar to that of capsaicin except the former was less active.

8. It is concluded that capsaicin acts directly on the atrium to depress the rate and contractile force. Capsaicin most probably reduces and stops heart rate by interfering with impulse production and/or propagation in the SA node. Functional disturbance in nodal cell membrane is believed to be the mechanism of capsaicin action on the rate. Inhibition of mitochondrial oxidative phosphorylation is the most likely mechanism for the capsaicin-induced reduction in contractile force. It remains to be investigated whether this effect of capsaicin on the heart also occurs in those people ingesting hot pepper. Nevertheless, heavy chili consumer should be especially wary about the possible noxious effect capsaicin might have on cardiac performances.