CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Conclusion

Recommendations
High blood pressure is probably the most common, chronic disorder in medical practice found the world over. In fact, today it has reached epidemic proportions. About 40% of all deaths below the age of 65 and an equal percentage of early retirements on health grounds are due to cardiovascular problems of which high blood pressure and its complications remain predominant. High blood pressure ranks as a prime cause of strokes, heart attacks and heart failure. Yet one out of three persons who suffer from high blood pressure are unaware that they have it. Thus the undetected and untreated hypertension increases twice the risk of vascular disease, thrice the ischaemic heart disease, four times the congestive heart failure and several times the strokes.

There is a dire need to screen the population for early detection and diagnosis but the available information on the magnitude of the problem from large city hospitals cannot truly reflect the rural segment of our population.

There have been no surveys on the population in the villages of Kira District of Gujarat. The dietary habits like consumption of large amounts of fats, pickles etc. might influence the incidence of hypertension in this relatively affluent part of Gujarat.
In addition, the life-long commitment of the hypertensives to drug treatment, once detected, the hazardous side effects of some of the drugs and the cost of treatment involved on the hand and the tall claim for the beneficial effects of the leaves of Ocimum sanctum (Tulsi) on hypertension by the folklore on the other hand prompted a scientific investigation on the hypotensive effect of Ocimum Sanctum.

Thus the objectives of the present study are:

1. to study the incidence of hypertension in persons above the age of 45 years of age in rural Gujarat.
2. to estimate the influence dietary intakes of salt Calories, and fat on the incidence of hypertension.
3. to determine the sensitive indicators of hypertension such as blood glucose, serum cholesterol and triglycerides.
4. to study the effect of Ocimum Sanctum on normotensive animals.
5. to study the effect of Ocimum Sanctum on hypertensive human subjects.
6. to prepare counselling hints for hypertensive subjects as a preliminary step of controlling measures at the National Health Programmes.
Nine villages within the radius of 6 Km. from the Hospital and Medical Research Centre, Karamsad were selected for the study. A total of 827 subjects ≥ 45 years of age were chosen by random sampling method.

A dietary survey by oral questionnaire method was conducted using the measurement of cooked foods with the help of HSAI standard cup and spoons. In addition, data were collected on body weight, height and blood pressure using a standard bath room scale, inch tape and an electronic sphygmomanometer.

Fasting blood levels of sugar, cholesterol and triglycerides were estimated by AOAC methods on a few hypertensive and normal subjects.

Juice extracted from the leaves of Ocimum Sanctum was fed at varying amounts to normotensive rats, dogs and chicken to study the effect of the same on blood pressure.

This experiment was extended to human subjects suffering from hypertension. A randomized cross-over study was conducted for 10 days with pre drug therapy of 5 days and a post drug therapy of 5 days using 30 ml of 75% juice of the leaves of Ocimum Sanctum and placebo on 10 hypertensives in each category. A further study on the hypotensive effect of
60 ml of the juice on 16 hypertensive subjects for 12 days was conducted.

As a supportive data, the mineral content of the leaves of Ocimum Sanctum was determined with particular reference to sodium, magnesium, potassium and calcium by AOAC methods.

Using the criteria of Dalal (1980) the subjects between the age group of 45-64 years with a diastolic pressure of \( \geq 95 \text{ mm Hg} \) and a systolic pressure of 160 mm Hg and those above 65 years with a diastolic pressure of \( \geq 95 \text{ mm Hg} \) but systolic pressure \( \geq 170 \text{ mm Hg} \) were considered as hypertensive. The results showed that the incidence of hypertension was 11.5% on an average in the population studied. Karamsad and Sandesar had a much higher number of subjects with high blood pressure while there were none in Devrajpura and Oskulpura.

Women were found to be more prone to hypertension than men.

The percentage incidence increased advancing age and the mean diastolic pressure was also found to go up as the body weight increased.

A higher intake of Calories, fat and salt was observed in hypertensives than in normotensives.
The blood picture showed that there was a significant difference between the two groups as far as the triglycerides, cholesterol and blood sugar were concerned, pointing that these could be used as indicators in the detection of high-risk group.

The animals injected with the juice extracted from the leaves of Ocimum Sanctum showed a fall in blood pressure indicating the beneficial effects of the same on high blood pressure.

These results were confirmed by the human experiment. After a 10 day's feeding trial with the juice of Ocimum Sanctum leaves, both the systolic and diastolic pressure were found to be reduced. When the subjects were crossed over a fall in blood pressure was observed in the hitherto controls on receiving the juice for the next 10 days. This experiment when repeated with double the dosage on another set of 16 hypertensives for 12 days further strengthened the possibility of using the leaves of Ocimum Sanctum for treating the hypertensive subjects with no side effects whatsoever.

A brief guideline for the health authorities and a few counselling hints for the hypertensives were prepared towards the aim of 'secondary prevention'.
RECOMMENDATIONS FOR FURTHER STUDIES

On Hypertension:

1. The association between stroke coronary heart disease and usage of oral contraceptives in women population.
2. The mechanism whereby the oestrogen containing contraceptives raises blood pressure. (Although oestrogen component is the principle suspect, progestogen effect has not been excluded).
3. Drugs that induce hypertension - Analgesics and hypertension.
4. Potassium chloride as a substitute for sodium chloride in food preservation.
5. The association between noise and hypertension.
6. The association between caffeine and hypertension.

On Ocimum Sanctum:

1. Mechanism underlying the hypotensive effect of Ocimum Sanctum.
2. Effect of Ocimum Sanctum on low blood pressure.
3. Plasma and urinary levels of sodium, potassium and calcium on feeding leaves of Ocimum Sanctum in normal and hypertensive subjects.
4. Effect of dried leaves of Ocimum sanctum on hypertension.

5. Effect of cooking leaves of Ocimum sanctum on the active principle if any.