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The Effects of Red Ginseng on Blood Pressure and the Quality of Life in Essential Hypertensives

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Abstract

We studied the effects of red ginseng on blood pressure (BP) and the quality of life (QOL) in 19 hypertensive patients treated with antihypertensive agents. Red ginseng was administered at a dosage of three grams a day for three months. Systolic blood pressure was significantly lowered during the administration period of red ginseng, while diastolic blood pressure and heart rate remained unchanged. QOL was significantly improved in 89% of the patients. Among the QOL variables, sleep disorder, thirst, fatigue, mood, sexual life and general well-being were improved. Furthermore, an improved coefficient of variation of R-R intervals ($CV_{R\text{-}R}$) was observed during the period. A month after the cessation of red ginseng, systolic blood pressure returned to the level before the administration and QOL variables deteriorated to previous pre-treatment states. These results suggest that red ginseng may lower systolic blood pressure and may improve QOL in patients treated with antihypertensive agents.

Introduction

A principle goal of antihypertensive therapy is adequate blood pressure control. Recently, this goal has been modified to include adequate control obtained without sacrificing the quality of life (QOL) of the patient[1,2]. Many antihypertensive agents have been reported to cause a significant disturbance of the QOL, especially agents which cause depression and impaired sexual capacity[3,4]. These present a significant problem in the maintenance of long-term blood pressure control.

Red ginseng has been reported to improve a variety of complaints through its anti-depressant and anti-fatigue actions[5]. Its effect as an additional agent in patients undergoing treatment for hypertension with other drugs has not been studied. In the present study, red ginseng was administered to patients with essential hypertension treated in an outpatient clinic to evaluate the effect of red ginseng on blood pressure and the QOL.

Materials and Methods

Table 1 summarizes the selection criteria for this study. The study included 19 patients, nine male and ten female with essential hypertension, ranging in age from 44 to 87 years. The duration of the hypertension ranged from one to 25 years with varying degrees of severity as classified by the WHO. There were nine patients with Stage I desease, eight with Stage II disease and two with Stage III disease. Eighteen patients were currently treated with pharmacologic antihypertensive therapy and one patient was treated with dietary and sedative therapy . Table 2 summarizes the antihypertensive agents used in these patients at the time of the study.

During the course of the study, all medications, including antihypertensive medications, were unchanged to study the effect of red ginseng.

Figure 1 illustrates the method of study. In the 19 patients, 3 g of red gisneng powder manufactured by Office of Monopoly, Republic of Korea, was administered daily in three divided doses for a 12 week period. After an interval free of red ginseng, the drug was re-administered for an additional 4 weeks at the same

Table 1. Patient profile

Patients	19
Age (yr)	44~87 (mean 65)
Sex (M:F)	9 : 10
WHO classification	
stage I	9
stage II	8
stage III	2

Patients = Essential hypertensives

Table 2. Antihypertensive agents

durgs	cases
Calcium antagonist	5
ACE inhibitor	3
Calcium antagonist + α-methyldopa	3
β-blocker	2
Diuretic	2
Calcium antagonist + β-blocker	2
Calcium antagonist + β-blocker + α-methyldopa	1

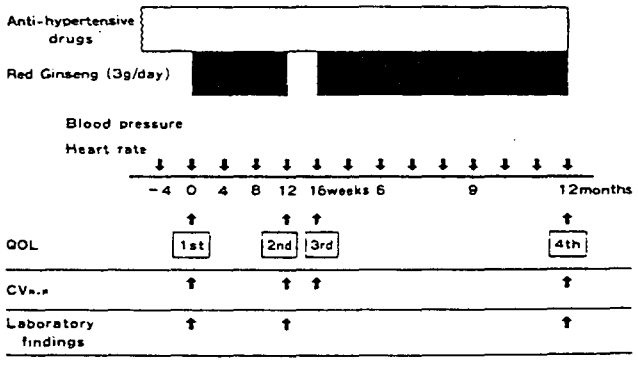
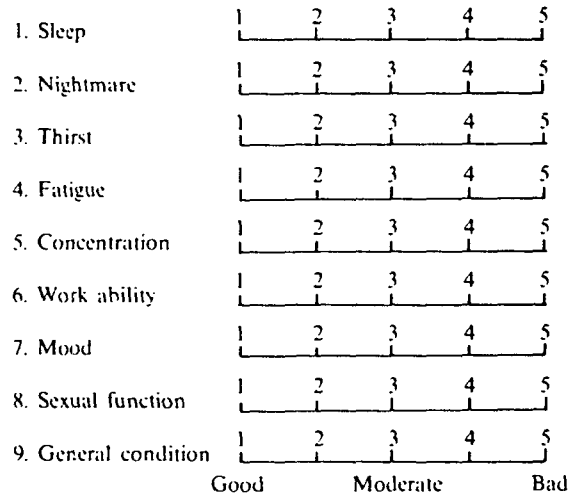


Figure 1. The method of study

Table 3. The items of questionnaire



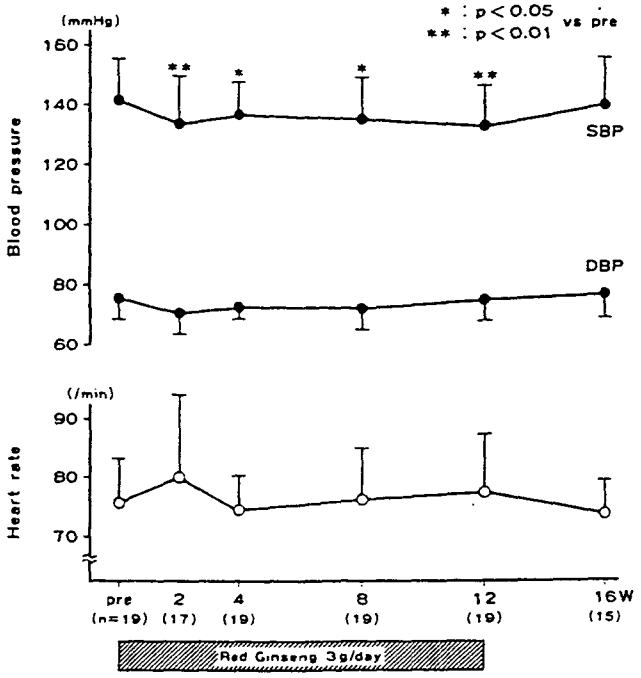


Figure 2. The changes in blood pressure and heart rate during the administration of red ginseng

dose. A comparison was made of clinical parameters before, during and after the administrations of red ginseng. The drug was continued in patients who consented to its use. Study of the long-term clinical course of red ginseng treatment was possible for up to one year in 16 patients. Blood pressure and heart rate were measured. The QOL was evaluated using questionnaires.

Autonomic nerve function was evaluated using the coefficient of variation of the R-R interval (CV_{R-R}). Platelet aggregation, serum lipids, ECG and chest X-ray were also recorded as a part of the general clinical evaluation.

The QOL questionnaire consisted of 9 items listed in Table 3. Each item was evaluated with in 5 grades with a score of 1 representing good condition and 5 representing bad condition. A maxium of 45 points indicated the worst possible evaluation, and a score of 9 points represent the best evaluation for all 9 items. Deterioration and improvement of QOL was evaluated by changes in the total score.

Results and Discussion

Figure 2 illustrates the clinical effect of red ginseng up to the 16th week of administration. The upper panel shows blood pressure, and indicates a significant fall in systolic blood pressure during administration. In the 4th week following discontinuation of red ginseng, the blood pressure returned to near the previous levels. There were no significant changes in pulse or diastolic blood pressure. In addition, although there was a fall in mean systolic blood pressure from 142 mmHg to 134 mmHg after the 12th week of administration, the decrease was 8 mmHg, which failed to meet the criteria of a 10 mmHg decrease to demonstrate an antihypertensive effect. Thus, the administration of 3 g/day of red ginseng does not exert a direct antihypertensive effect such as that seen with other antihypertensive agents. There was no hypertensive effect noted, either. During the treatment period, no systolic or diastolic pressure measurement was higher than 160 or 95 mmHg respectively.

Figure 3 summarizes the changes in the QOL in the 11 patients older than 65 years. With the exception of cases 5 and 11, as shown by the hatched column, the total scores decreased with red ginseng treatment, indicating an improvement in the QOL. A deterioration was

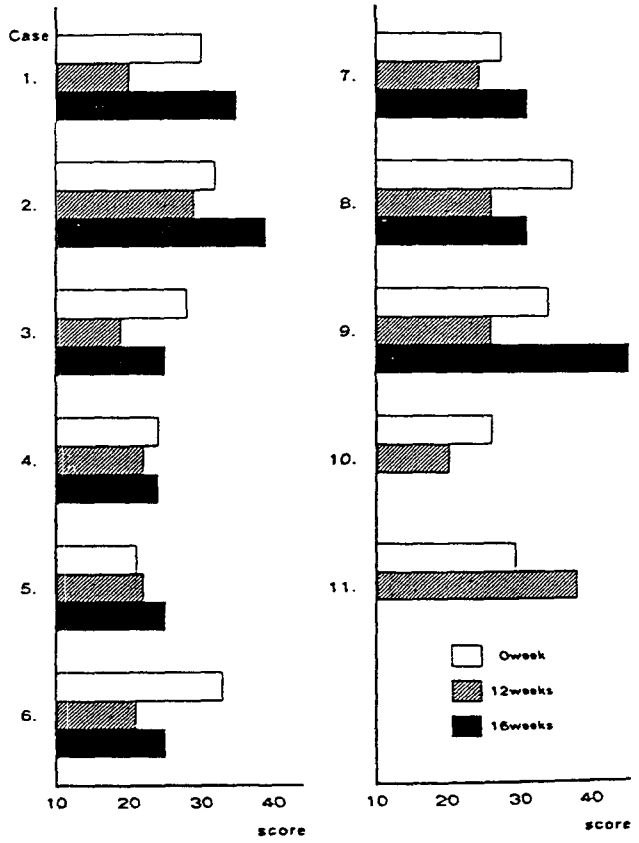


Figure 3. The changes in the QOL in the 11 patients over 65 years

seen after the discontinuation of red ginseng, as shown by the solid column. Figure 4 illustrates the QOL change in 8 patients under the age of 65 years. The QOL was improved by the 12th week of administration in all of these patients. As in the patients older than 65 years, there was usually a deterioration of the QOL after discontinuation of red ginseng, although in cases 17 and 18, the improvement in the QOL persisted even after discontinuation. These suggest that the improvement of QOL was seen in 17 among 19 patients (89%) with red ginseng administration and after discontinuation, the deterioration of the QOL was seen in 14 among 16 patients (88%).

Table 4 illustrates the changes in mean scores for each item in the QOL score. By the 12th week of red ginseng administration, significant decreases of score, indicating improvement, were seen for sleep, thirst, fatigue, concentration, mood, sex life and general condition. The score for sex life improved in three patients. After discontinuation of red ginseng for four weeks, the scores reflected deterioration in the areas of sleep, thirst fatigue, work ability, mood and general condition. This suggests an action of red ginseng improving a depressive state with a possible additional effect improving sexual function. Some patients treated with red ginseng expressed the improvement as "an emancipation from the heavy feeling of the body never felt before "or" a sensation of a loss of lead from my body". Red ginseng is a useful adjunct to hypertensive therapy: it stabilizes blood pressure and improves many complaints affecting QOL related to conventional antihypertensive therapy. In addition, it may improve the compliance of patients taking antihypertensive medications.

Figure 5 illustrates the result of CV R-R measurement, an indicator of autonomic nervous system function[6].

Table 4. The changes in mean scores for each item in the QOL

	Items	0 week	12 Weeks	16 Weeks
1	Sleep	3.3± 0.9	2.2± 1.2**	3.4± 1.4††
2	Nightmare	2.7± 1.3	2.2± 1.3	2.8± 1.6
3	Thirst	3.1± 1.0	2.7± 1.0*	3.3± 1.1†
4	Fatigue	3.5± 1.2	2.5± 0.9*	3.9± 1.0††
5	Concentration	3.4± 0.8	2.8± 1.7*	3.0± 1.0
6	Work ability	3.4± 0.8	3.2± 0.9	3.7± 0.9†
7	Mood	3.4± 0.9	2.6± 0.9*	3.2± 1.2†
8	Sexual function	3.7± 0.9	3.5± 0.8*	3.6± 1.0
9	General condition	3.8± 0.8	2.5± 1.1**	3.7± 1.1††

*P<0.05, **P<0.01 vs 0 week, †P<0.05, ††P<0.01 vs 12 weeks, mean ± SD

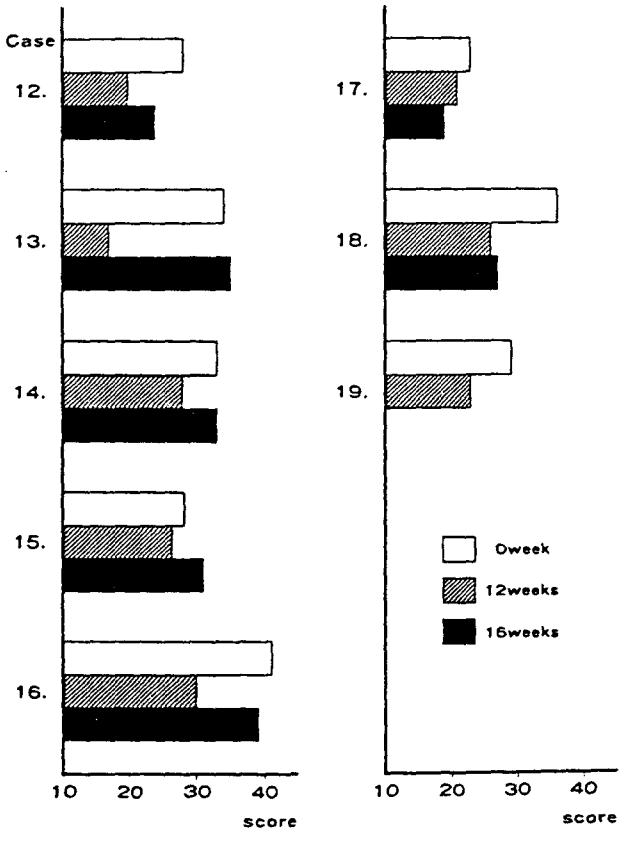


Figure 4. The changes in the QOL in the 8 patients under 65 years

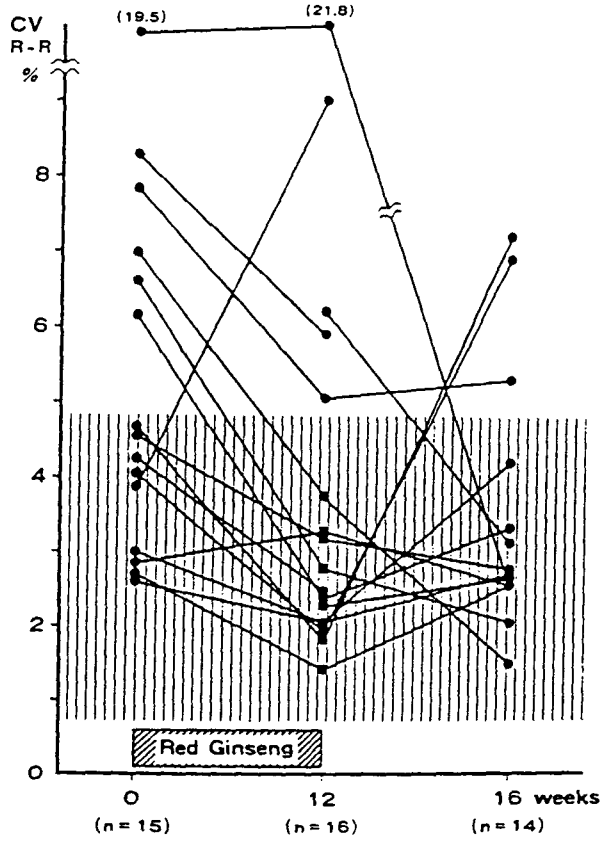


Figure 5. The changes in CV R-R measurement

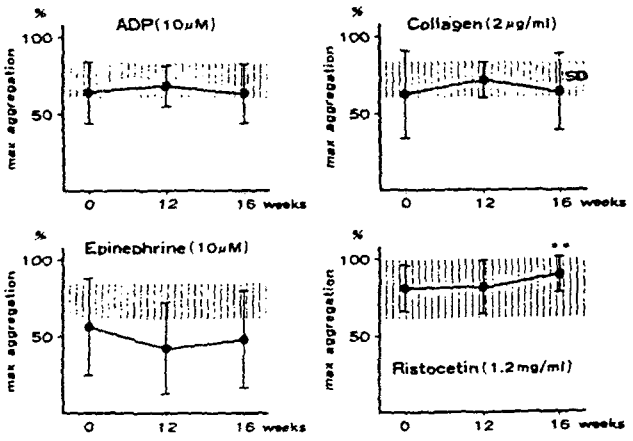


Figure 6. The changes in platelet aggregation

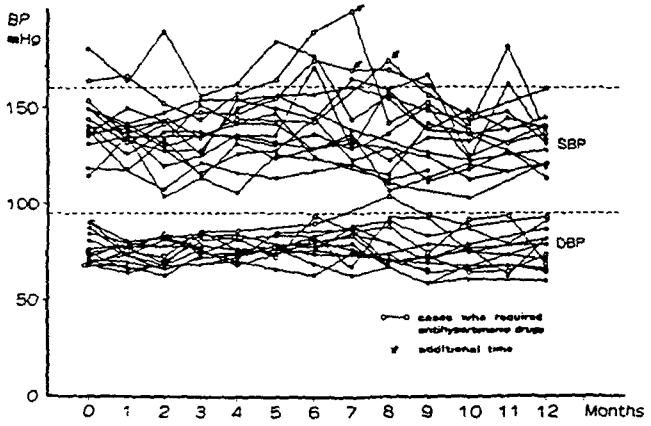


Figure 7. The changes in blood pressure by a one year administration of red ginseng

Table 5. The changes in clinical laboratory findings

		0 Week	12 Weeks	P
Cholesterol	mg/dl	204± 38	206± 41	NS
Triglyceride	mg/dl	154± 100	148± 89	NS
HDL-C	mg/dl	56± 17	56± 18	NS
FBS	mg/dl	106± 10	106± 10	NS
Hematocrit	%	40± 5	41± 5	NS
s-GOT	IU/l	25± 19	25± 18	NS
s-GPT	IU/l	17± 19	16± 12	NS
BUN	mg/dl	20± 6	20± 7	NS
Cretinine	mg/dl	1.2± 0.4	1.1± 0.5	NS
NAG index	U/g · creatinine	6.7± 5.8	5.7± 3.1	NS
CTR	%	50± 5	50± 5	NS
ECG SV_1+RV_5	mm	29± 11	28± 11	NS

NS : not significant, mean± SD

which was performed along with the QOL questionnaire. The CV R-R demonstrated a wide variability prior to red ginseng administration with an average of 5.9. A significant fall to an average of 4.7 was noted by 12 weeks of administration, and in all patients, the value approached normal levels as shown by the shaded region. After discontinuation, the values rose again. Consideration of these findings together with the improvement in QOL parameters raises possibility of central and autonomic nervous system stabilization as the basis for the effect of red ginseng on the QOL in these patients.

Figure 6 illustrates the changes in platelet aggregation before and after red ginseng administration. There were no significant changes noted in ADP, collagen, epinephrine, or ristocetin.

Table 5 lists the changes of general clinical laboratory test results. There were no changes noted in lipids, blood sugar, liver and renal function studies, ECG and CTR.

In 16 patients who consented, the long-term effect of red ginseng on blood pressure and QOL was studied for 8 months beginning with the re-administration of red ginseng. Figure 7 shows the blood pressure changes in each case. In 13 patients, accounting for 81% of the patients, the blood pressure was maintained within upper limits of 160 and 95 mmHg for systolic and diastolic pressure, respectively. In three cases, a rise in blood pressure required additional antihypertensive agents during the prolonged administration of red ginseng. The arrow indicates when the drugs were required. In one case, the additional antihypertensive agent was discontinued at a later period. The increase pressure occurred six to seven months after the initiation of red ginseng administration, which makes the establishment of a causal relationship difficult. There was no relationship with body built.

In the mean of each QOL parameter after a one year administration of red ginseng, there is an improvement in the scores for fatigue, concentration, work ability, mood and general condition. A significant improvement in sex life was noted in three patients even after a year. During the long-term administration, there were no laboratory test changes or subjective symptoms suggestive of any side effects.

Conclusion

1) Red ginseng did not display an additional antihypertensive effect in patients with treated essential hypertension, but several indications suggested an improvement in the quality of life.

2) The mechanism of this action may be related to a stabilization of central and autonomic nervous function.

3) Long-term therapy with red ginseng as shown to maintain the quality of life treated hypertensive patients without any side effects of undesirable influence on blood pressure.

Acknowledgment

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H. Oura : We found the aggresive behaviour by long-term administration of red ginseng powder in the rats. How do you think about that in patients?

Y. Imamura : I am sorry, I have no information.

본태성 고혈압 환자의 혈압과 생활상에 미치는 홍삼의 영향

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고혈압 치료제를 투여한 19명의 고혈압환자에게 홍삼을 매일 3 g씩 3개월간 투여하고 혈압과 생활상태를 조사하였다. 홍삼투여기간중에는 수축기 혈압이 현저히 감소하였으나, 이완기혈압과 심장박동에는 변화가 없었다. 환자 중 89%가 생활상태가 현저히 개선되었는데 그중 불면, 갈증, 피로감, 기분, 성생활과 일반적인 상태 등이 두드러졌다. 더우기 이 기간 중에서 R-R 간격 변화계수가 개선되었다. 그러나 홍삼투여를 중단한 1개월 후에는 수축기 혈압과 생활상태를 나타내는 인자 등이 투여전의 상태로 다시 악화되었다. 이러한 결과로서 홍삼은 수축기 혈압을 저하시키며 고혈압 치료제를 투여한 환자에 있어서 생활상태를 개선시키는 것으로 사료된다.