



BLOCKADE OF VOLTAGE DEPENDENT CALCIUM CHANNELS LOWERS THE HIGH BLOOD PRESSURE THROUGH GINGER

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ABSTRACT: Ginger is a herbal remedy and highly effective in the treatment of high blood pressure. Ginger helps to reduce the high blood pressure through blockade of voltage dependent calcium channels. The present study aimed to evaluate the effectiveness of Ginger in the treatment of high blood pressure. 100 subjects attending the out patient department of General Medicine of Narayana medical college and hospital, Nellore with complaints of high blood pressure are recruited into the study after obtaining informed consent for a period of one month. During the period of treatment the symptom relief in the subjects is assessed periodically by a sphygmomanometer. Ginger administration is proved to be a better treatment in high blood pressure.

Key words: Ginger, Hypertension.

INTRODUCTION

Ginger (*zingiber officinale*) is one of the commonly used flavoring food agents¹. In ancient times ginger is used for taste, smell and for its therapeutic value in a wide variety of diseases, mainly gastrointestinal disorders, nausea, vomiting and motion sickness[2,3]. Ginger is a herb which contain a chemical component named zingiberene. It has anti-inflammatory, analgesic, antipyretic, antimicrobial, hypoglycemic, anti-migraine, anti-schistosomal, anti motion sickness, anti oxidant, hepato-protective and anti-thermic properties[4]. Ginger chemical component helps to lower overall blood cholesterol components, which can reduce heart diseases. Because of anti thrombic potential of ginger, it may interact with blood thinning drugs such as warfarin. Ginger is a pungent herb has been shown to reduce hypertension or high blood pressure when taken regular in tea form⁵. The crude extract of ginger induced a dose dependent fall in the arterial blood pressure⁶. Ginger has a diuretic and blood pressure lowering effect[7,8]. Interestingly a few studies have been carried out to explore the blood pressure lowering potential of ginger extract and its active constituents [9,10,11]. Ginger helps to lowering the blood pressure through blockade of voltage dependent calcium channels¹². Ginger blocks a calcium channel which would normally induce the contraction of the smooth muscle tissue found in organs and arterial walls. The reduction of the smooth muscle contraction results in more relaxes arterial walls that allow blood to flow more freely and at a lower pressure.

MATERIAL AND METHOD

This is an open labeled study done for one month with 100 high blood pressure subjects. After being approved by the Institutional Ethical Committee this study is conducted at Narayana Medical College and Hospital, Nellore. Informed consent was obtained from study participants attending the outpatient department of General Medicine in Narayana Medical College and Hospital. The inclusion criteria were hypertensive subjects, aged between 20-50 yrs, without any other complaints or other illnesses.

Four grams of fresh ginger piece was given before breakfast in early morning once daily for a period of one month. Subjects were recorded blood pressure with sphygmomanometer before, during (every weekend) and one week after the completion of treatment.

RESULTS

Total number of subjects included in this study were 100. These were no dropouts during the treatment period. Before, during (every weekend) and one week after completion of the treatment the observed average blood pressure scores were found to be as follows.

Table -1: Blood pressure scores before and after treatment

Weekends	Blood pressure scores 100 nos	
	SBP	DBP
Before treatment	180.0 mm of Hg	130.0 mm of Hg
1 st weekend	168.2 mm of Hg	120.41 mm of Hg
2 nd weekend	152.4 mm of Hg	104.14 mm of Hg
3 rd weekend	137.58 mm of Hg	92.34 mm of Hg
4 th weekend	123.86 mm of Hg	85.76 mm of Hg
5 th weekend (week after completion of treatment).	119.8 mm of Hg	80.2 mm of Hg

The results have shown that the high blood pressure scores were consistently and significantly reduced. There were no notable side effects except for the slightly bitter taste experienced by the subjects.

DISCUSSION

Ginger is the rhizome of *Zingiber officinale*. In many cultures, ginger, fresh sliced, sugared and pickled is eaten as a part of a meal and is a good flavoring agent. It has been used as a remedy for high blood pressure. Common dosages range from 2-4 gm in powdered form or dry extract or as fresh ginger. It has been proven that ginger is effective in the treatment of high blood pressure. Ginger acts in two ways to lower blood pressure. Blood clots can restrict blood flow in the circulatory system, which can induce hypertension. By preventing blood clots, ginger helps to prevent heart attacks and strokes. Anti-platelet aggregation or reduced blood clotting is essentially the same action as seen in pharmaceutical blood thinners like warfarin, but on a smaller scale. Ginger blocks a calcium channel which would normally induce the contraction of the smooth muscle tissue found in organs and arterial walls. The reduction in smooth muscle contraction results in more relaxed arterial walls that allow blood to flow more freely and at a lower pressure. So in this study, four grams of ginger is taken to reduce the blood pressure. Analysis of outcome basing on sphygmomanometer indicates the significant reduction of blood pressure after intake of four grams of fresh ginger. As per earlier studies it is suggested that fresh ginger may be effective for high blood pressure when used at a recommended dose of four grams per day.

As per this study, ginger is found to be more effective to relieving the high blood pressure through blockade of voltage dependent calcium channels.

CONCLUSION

This open label study has shown that intake of four grams of fresh ginger is found to be significantly effective in reducing the high blood pressure. Ginger is a medicinal plant and its importance known since ancient period. Now a day's people are using ginger as a medicinal purpose. Thus we feel that ginger is a better non pharmacological intervention in the treatment of high blood pressure without any notable side effects.

REFERENCES

- [1]. By Owen Pearson The Effects of ginger on high blood pressure NOV 6, 2010.
- [2]. Nadkarni KM. Indian Materia Medica Bombay: Popular Prakashan 1976: 1308-1315.
- [3]. Ghayur MN, Gilani AH. Ginger: from myths to reality. In: Gottschalk CE, Green JC, eds. Handbook of Ethnotherapies Hamburg: Verlag Und Vertrieb, 2004 (in press).
- [4]. Langner E, Griefenberg S, Gruenwald J, Ginger: history and use. Adv Ther. 1998;15:25-44.
- [5]. By Olivia Rose N.D. How To prepare ginger for Hypertension. Aug 11, 2011.
- [6]. Ghayur, Muhammad, Nabell Mphil; Gilani, Anwarul Hassan Ph.D. Ginger Lowers Blood Pressure Through Blockade of Voltage Dependent Calcium Channels.
- [7]. Ghayur MN, Gilani AH. Ginger: from myths to reality. In: Gottschalk CE, Green JC, eds. Hand book of Ethnotherapies. Hamburg : Verlag Und Vertrieb, 2004 (in press).
- [8]. Miller LG, Kazal LA, Herbal medications, nutraceuticals and hypertension. In: Miller LG, Murray WJ, eds. Herbal Medicinals-A clinician's Guide. New York: Pharmaceutical products Press 1998:135-162.
- [9]. Weidner MS, Sigwart K. The safety of a ginger extract in the rat. J Ethnopharmacol. 2000; 73:513-520.
- [10]. Suekawa M, Ishige A, Yuasa K, et al. Pharmacological studies on ginger. I. Pharmacological action of pungent constituents, (6)-gingerol and (6)-shogaol. J Pharmacobiodyn. 1984; 7:836-848.
- [11]. Suekawa M, Aburada M, HOSOYA E. Pharmacological studies on ginger. II. Pressor action of (6)-shogaol in anesthetized rats or hindquarters, tail and mesenteric beds of rats. J Pharmacobiodyn. 1986; 9:842-852.
- [12]. Ghayur MN, Gilani AH. Ginger lower blood pressure through blockade of voltage dependent calcium channels.