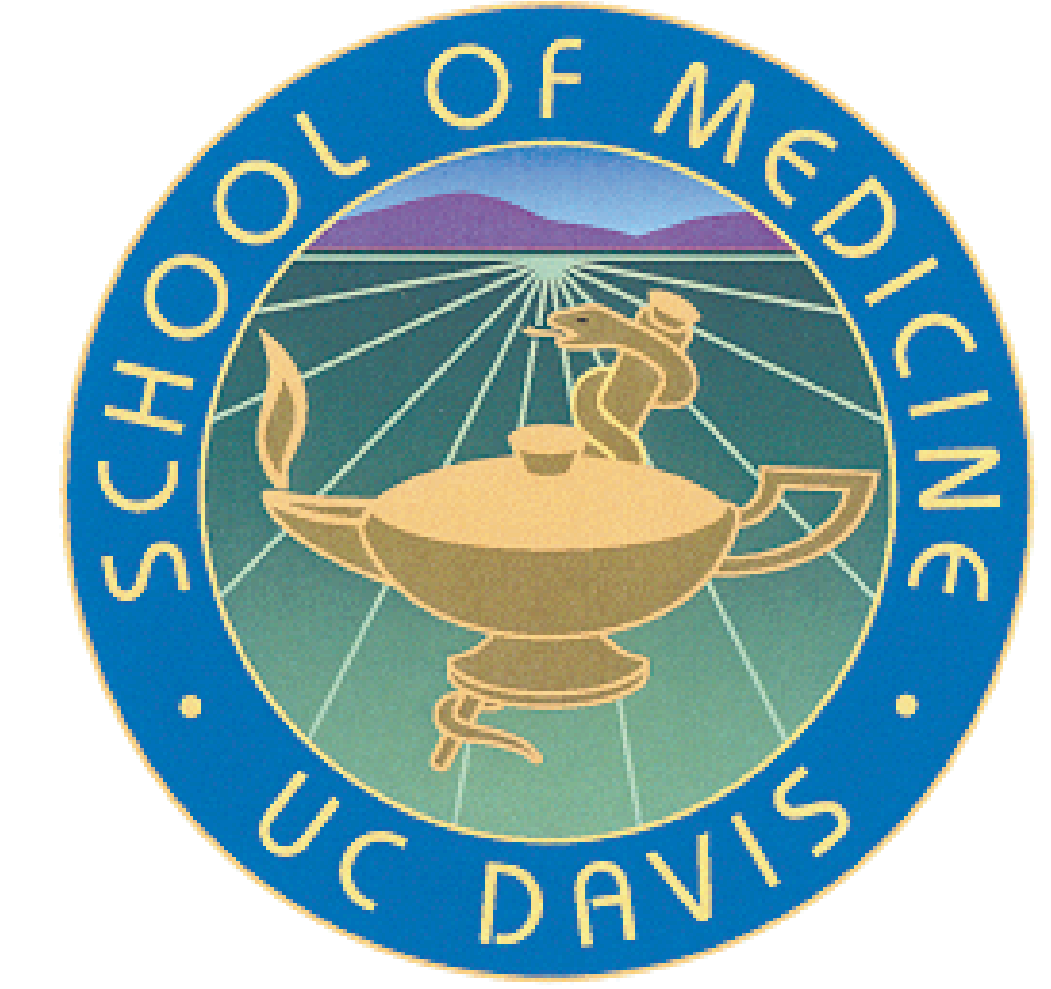




# Effect of a polyphenolics extracts of Grape Seeds (GSE) on Blood Pressure(BP) in patients with the Metabolic Syndrome (MetS)



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## Abstract- #211.1

Effect of a polyphenolics extracts of Grape Seeds (GSE) on Blood Pressure (BP) in patients with the Metabolic Polyphenolic compounds in grape seeds are potent antioxidants which cause a NO mediated endothelium dependent relaxation of blood vessels. The present study was undertaken to determine whether a GSE lowers BP in subjects with the MetS. The GSEs which was manufactured by Polyphenolics Inc. (Madera, CA) contains ~95% phenolic compounds and is low gallate units. 24 subjects with MetS (NCEP III) were randomized into 3 groups (n=8) and given either a placebo, 150 mg/day or 300 mg/day of the extract. A 12 hour ambulatory BP recording was made at the start of the study and after 4 weeks of treatment. Serum lipids, blood glucose, plasma insulin and oxidized LDL were measured at the start and end of the study. Oxidized LDL was measured using an ELISA (Mercodia Inc, Uppsala, Sweden). After 4 weeks subjects receiving both 150 mg and 300 mg of GSEs significantly lowered their BP while those on placebo showed no significant change (p < 0.05, ANOVA). The fasting blood glucose, plasma insulin, serum lipids and plasma oxidized LDL concentrations were unchanged. Insulin resistance as determined by the homeostasis model was elevated in all 3 groups but did not change with treatments.

	Placebo		150 mg of extract/day		300 mg of extract/day	
	S	D	S	D	S	D
Start	123± 4	74±4	137± 4	84±3	129± 4	79±3
After 4wk	121± 4	70±4	124± 5	78±2	117± 3	71±3
p	0.2	0.1	0.003	0.009	0.007	0.006

Systolic =S, Diastolic =D

It is suggested that the GSE used in the present study which has been granted GRAS status by the FDA, is a potentially useful nutraceutical compound for the management of BP in patients with Met S.

## Introduction

Patients with the metabolic syndrome are known to have a decreased plasma antioxidant capacity (1). Some of these also have pre-hypertension. Grape seed extracts contained polyphenolic substances which are potent antioxidants. They also cause nitric oxide mediated EDR (2) and upregulate eNOS gene expression (3).

## Hypothesis

Grape seed extract lowers blood pressure and reduces oxidized LDL concentrations in patients with the metabolic syndrome

## Methodology

**Subject selection:** The study was approved by IRB, University of California, Davis. After an initial screening session 24 subjects with metabolic syndrome were identified using the NCEP III guidelines. They were randomized into 3 groups (n=8) and given either a placebo, 150 mg/day or 300 mg/day of the extract. Subjects were treated for 4 weeks.

**Grape seed Extracts:** The GSEs (Mega Natural BP) was manufactured by Polyphenolics Inc. (Madera, CA). The extracts contained ~95% phenolic compounds and it is low gallate units. This extract has been granted the Generally Recognized As Safe (GRAS) status by the FDA for use as a nutraceutical product.

**Blood pressure monitoring:** A 12 hour ambulatory BP recording was made at the start of the study and after 4 weeks of treatment using Sein blood pressure monitor (SE -25S, Korea).

**Blood measurements:** Serum lipids, blood glucose, plasma insulin and oxidized LDL were measured at the start and end of the study. Oxidized LDL was measured using an ELISA (Mercodia Inc, Uppsala, Sweden) (4).

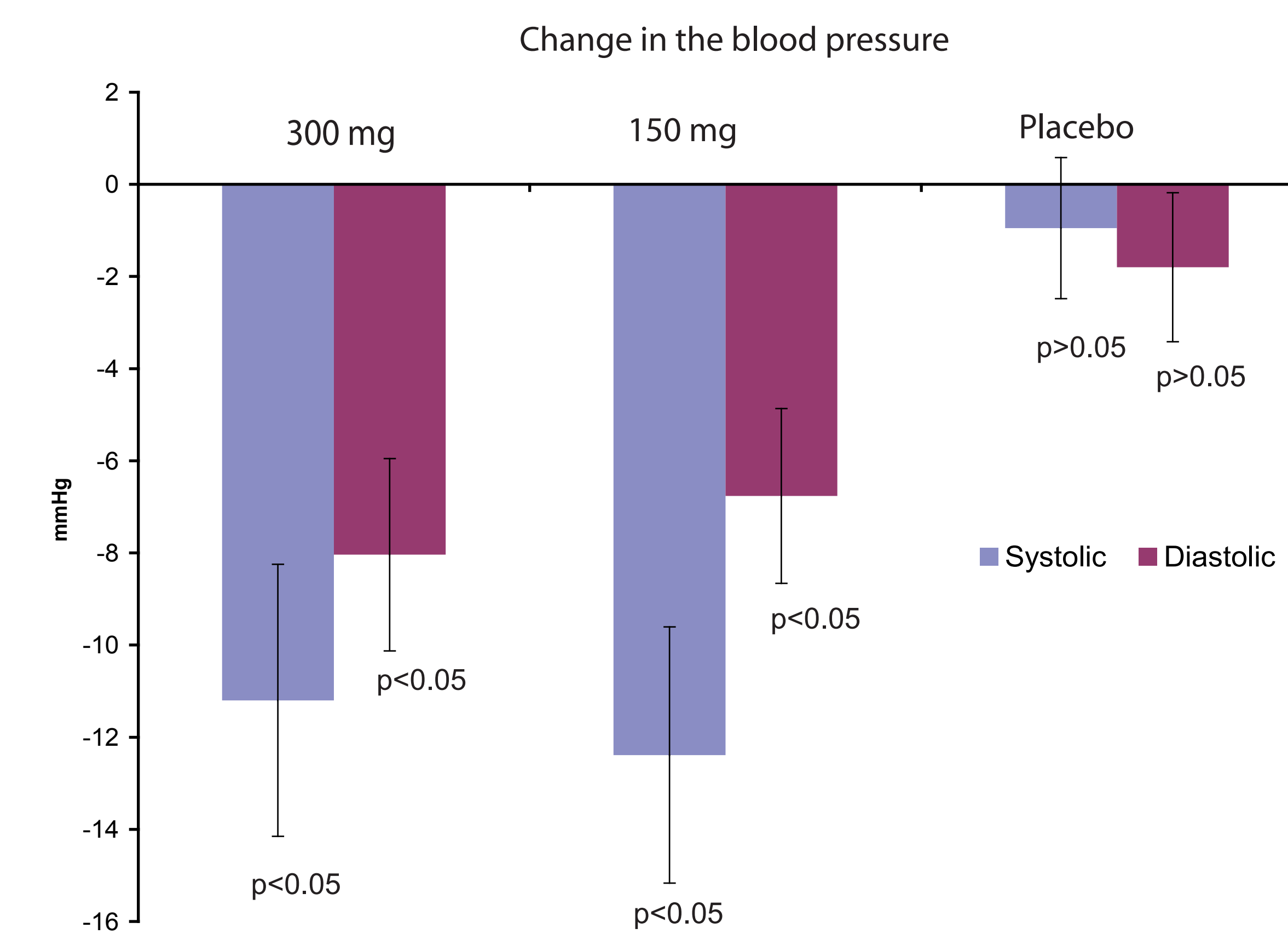
## Results

**Serum Lipids:** No significant changes were observed in the serum total cholesterol, LDL cholesterol, HDL cholesterol and triglyceride concentration before and after the treatments (p>0.05).

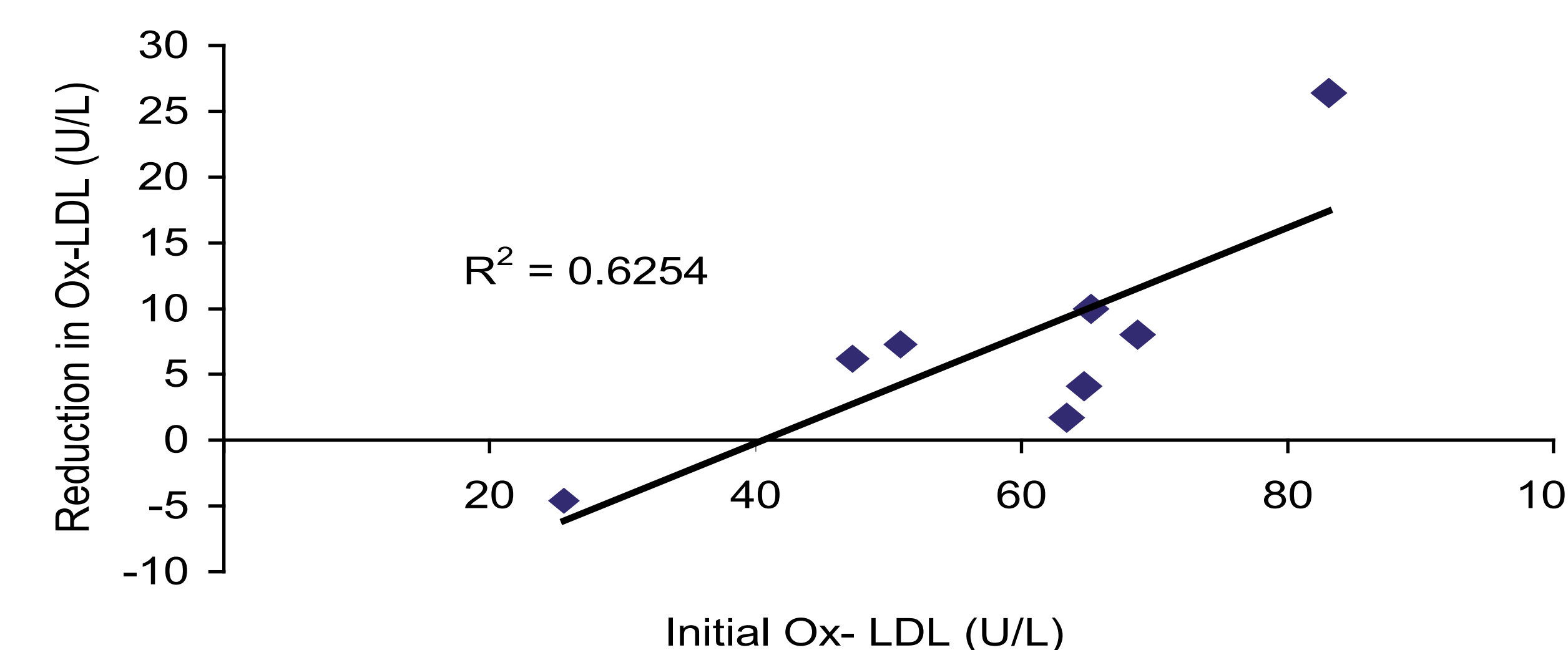
**Insulin levels:** plasma insulin levels were remained unchanged before and the after the one 4 week treatment period in all groups (p>0.05). Insulin resistance was elevated in all subjects but was not affected by the extracts.

**Blood pressure:** Initial systolic and diastolic blood pressure levels were not significantly different among the three groups as determined by ANOVA (p>0.05). The changes in blood pressure after the 4 week treatment period are given below. Both systolic and diastolic blood pressures were significantly reduced after 4 weeks in the 300 mg and 150 mg groups (p<0.05).

## Results



**Oxidized LDL:** Oxidized LDL concentration was significantly reduced in the group treated with 300 mg of the extract, there was reduction oxidized LDL. The reduction was correlated with the baseline values as shown below. (R = 0.8, P=0.003 ).



## Summary and Conclusions

These findings show that the grape seed extract administered orally reduced both systolic and diastolic pressures in patients with the metabolic syndrome. It appears that both doses (150 mg/day and 300 mg/day) are equally effective in lowering blood pressure.

The extract also appears to reduce the concentration of oxidized LDL in the group given 300 mg of the extract/day.

It is suggested that the extract could be useful in the management of patients with the metabolic syndrome, especially when the blood pressure is in the pre-hypertensive category.

## Acknowledgement

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