

# Initiative Study for High Cholesterol Inhibitor with Various Components from Natural Herb Medicine

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## ABSTRACT

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## Introduction

40% of medicines were induced from natural resources while one candidate could be available from 5,000 organic syntheses. It is therefore important to screen the effective materials from natural medicine to ultimately scale up the effective components by either chemical or biotechnological synthesis. The purpose of the present study is to analyze several candidates of natural herbs and to examine their efficacy in spontaneously hypertensive rats as a high cholesterol inhibitor.

## Experiment

9 natural herbs (*ginseng*, *ganoderma*, *iucidum*, *coriolus versicolor*, *angelica gigas nakai*, *epimedium Koreanum nakai*, *eucommia ulmoides*, *Lycium chinense Miller*, *cassiae semen*, *pine needle*) were boiled 4 hours to be centrifuged at 10,000 rpm for 20 min. Their supernatants were under rotary evaporator (73°C, 1.15 rps, 1hr 10min). 5g activated carbon was added at 30°C, which was shake and filtered by vacuum filtration. Animal experiments were carried out with 24 Spontaneously Hypertensive Rats (SHR) for 3 months. Blood samples were analyzed for total cholesterol, triglycerides, HDL cholesterol and total lipid. Blood pressure was

measured by tail cuff method with a PB Recorder 8006 (Ugo Basile). There were 4 groups for animal tests : Group I (Distilled water), Group II (Natural herbs extract), Group III (Sodium hyaluronate) and Group IV (Sodium hyaluronate + Natural herbs extract).

## Results

FT-IR spectrum for 9 natural herbs and 1 standard were shown in Figure 1.

- a) *Ginseng*,
- b) *Ganoderma lucidum*,
- c) *Coriolus Versicolor*,
- d) *Angelica Gigas Nakai*,
- e) *Epimedium Koreanum Nakai*,
- f) *Eucommia Ulmoides*,
- g) *Lycium Chinense Miller*,
- h) *Cassiae Semen*,

i) Pine Needle,

j) Hyaluronic Acid Powder (Standard).

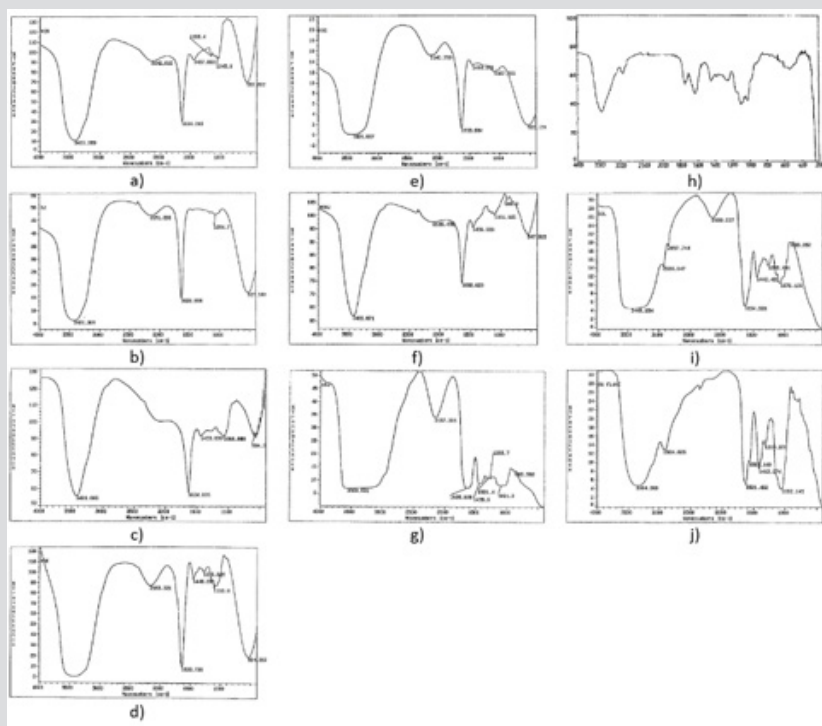


Figure 1: FT-IR-Spectrum of 9 Natural Herbs and 1 Standard.

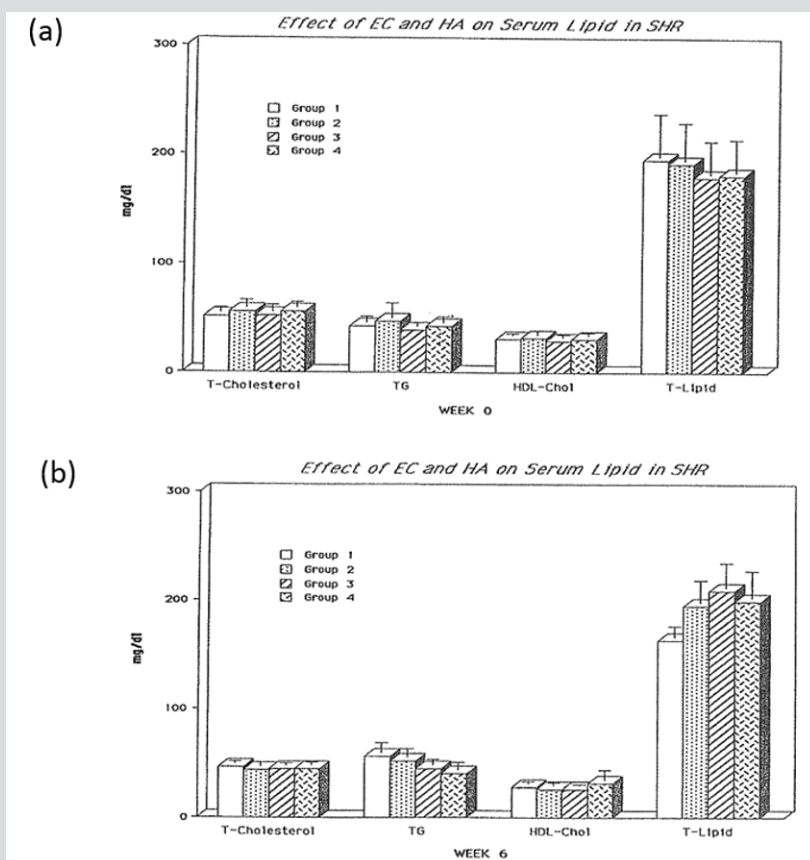


Figure 2: Biochemical Compositions of SHR Blood of Individual Group.

(a) Before Drug Administration.

(b) After Six Weeks of Drug Administration.

## Conclusion

1) An initiative study by FT-IR scanning proposed that *eucommia ulmoides*, *lycium chinense* miller and pine needle showed profiles close to that of sodium hyaluronate biopolymer.

2) 24 spontaneously hypertensive rats were fed for 130 days and bloods from their veins were sampled every 10 days. The group fed by a mixture of extracts from *eucommia ulmoides*,

*lycium chinense* miller and pine needle with sodium hyaluronate biopolymer (Group IV), showed decreases in cholesterol (15%) and total lipid (22%) while the ratio of HDL cholesterol with respect to total cholesterol was increased.

3) It is therefore suggested that a mixture of extracts from *eucommia ulmoides*, *lycium chinense* miller and pine needle with sodium hyaluronate biopolymer can be a good candidate for a high cholesterol inhibitor.

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