

The hypolipidemic effect of Meniran (*Phyllanthus niruri* Linn) from Indonesia-(preclinical study)

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Abstract:

Objectives: Meniran (*Phyllanthus niruri* Linn) was used to treat dyslipidemia disease in Javanese people. The aim of this research is to determined hypolipidemic effect of *P. niruri* Linn from Indonesia.

Materials and Methods: A number 20 of male wistar rats were divide into 4 groups; positive control, negative control, *P. niruri* Linn at dose of 500mg/200g rats and *P. niruri* Linn at dose of 1000mg/200g rats. On day 0. All rats were weighed and were measured of total cholesterol (TC) & trigliseride (TG) and then were injected by Triton-X at dose of 20mg/200g rats. All rats were fed with high cholesterol feed. Groups 1 were treated by simvastatin at dose of 0,72mg/200g rats, groups II were treated by water, group III and IV were treated by *P. niruri* Linn at dose of 500 and 1000mg/200g rats. On day 7, all rats were measured TC and TG.

Results: The blood TC and TG of rats which treated by *P. niruri* Linn at dose of 500 and 1000mg/200g rats for 7 days are lower than negative control significantly (p, 0.05 on LSD test).

Conclusion: *P. niruri* Linn have potencies as a hypolipidemic agent.

Keywords: *Phyllanthus niruri* Linn, Hypolipidemic, Triton-X.

INTRODUCTION

Free radicals and oxidants are two compounds that are toxic to the body. The examples of free radicals from the outside are pollutants, cigarettes, radiation and others. Excessive free radicals will accumulate in the body and for a long time cause oxidative stress. This oxidative stress can trigger degenerative and chronic diseases such as diabetics, rheumatoid arthritis, and cardiovascular diseases (1,2). Hyperglycaemia in people with Diabetes mellitus (DM) is one of the markers of oxidative stress (3). The high free radicals cause damaged cellular organelles and increased lipid peroxidase and will developed into insulin resistance. Oxidative stress triggers ROS (reactive oxygen species) that underlies the occurrence of insulin resistance and beta Langerhans cell dysfunction (4,5). The occurrence of dyslipidemia (increased TG, decreased HDL and increased small dense LDL) is mostly due to chronic diabetes (Diabetic dyslipidaemia) (6). Antioxidant act as defence mechanisms against oxidative stress in various ways including: preventing agents, capturing free radicals, repairing cellular damage and adapting cellular. Antioxidants also suppress free radical formation (7). Indonesia have many traditional herbal plant. Javanese people often use *P. niruri* to treat dyslipidemia disease. The aim of this research to determine hypolipidemic effect of *P. niruri* Linn from Indonesia.

MATERIAL & METHODS

The dried *P. niruri* Linn was found from *Pasar Gede* Market of Surakarta, Indonesia. Male Wistar rats was found from Medical faculty of Universitas Muhammadiyah Surakarta.

Preparation extract

100 g of Dried *P. niruri* Linn was powdered and then macerated by ethanol 94% for 3 days. The filtrate was concentrated in vacuum evaporator. The semisolid extract was stored in refrigerator.

Experimental test

A number 20 male wistar rats were weighed and divided into 4 groups. The positive control groups was treated by simvastatin at dose of 0,72mg/200g rats. The negative control group was treated by water. Group III and IV were treated by *P. niruri* Linn at dose of 500mg/200g rats and 1000mg/200g rats respectively. On day 0, all rats were measured total cholesterol (TC) & trigliseride (TG) and then injected by Triton-X at dose of 20mg/200g rats. Rats were fed with high cholesterol feed (eggs, and lipped of buffalo). The treatment was done for 7 days. On day 7 all rats were measured TC and TG. All research protocol were approved to Health research ethics committee of Faculty of Medicine of Universitas Muhammadiyah Surakarta

Table 1. Level of TC and TG on day 7.

Groups	Level of TC (mg/dL)		Level of TG (mg/dL)	
	Day 0	Day 7	Day 0	Day 7
Positive control	59,50±22,35	67,75±21,97*	47±18,92	51,5±15,86*
Negative controle	44,67±22,03	122±17,08	26±2,64	66,67±4,73
Meniran at dose of 500mg/200g	43,33±17,24	90,67±7,64*	40,33±14,05	46,33±20,26*
Meniran at dose of 1000mg/200g	42±5,09	72,2±11,50*	53,6±16,65	41,6±12,42*

Note: *: significant difference by LSD test on p (0.05)

From table above, we found that *P. niruri* at dose of 500 & 1000mg/200g have hypolipidemic effect.

RESULTS

The level of TC and TG for 7 days treatment was presented in table 1

DISCUSSION

In this research triton-X and high diet fat model was done to increase TC and TG. Triton X induces hyperlipidemia in mice by suppression the action of lipase to block the absorption of lipoproteins from circulation by the liver tissue. This cause increasing blood lipid levels (8). Research by Rani and Kumar, stated that the methanol extract of *P. niruri* Linn. for 4 weeks reduced TC & TG in mice (preclinical study) (9). *P. niruri* Linn extract improves decreases oxidative stress and improve dislipidemic profiles (10). The hypolipidemic mechanism of *P. niruri* Linn is not clear. *P. niruri* Linn extract reduce triglyceride synthesis by liver or by inhibiting the release of triglycerides from the liver in mice hypertriglyceridemia. The allegedly mechanism of this is to increase excretion of cholesterol in the stool. This was suspected by anthraquinone glycosides from *P. niruri* Linn extract (10). Research by Bavarva found that *P. niruri* Linn have antiperoxidative and antioxidant activities in diabetic rats models (11). The treatment by *P. niruri* Linn for 30 days at dose of (25 mg/kg b.w.) caused lowering in the lipids cholesterol and apoprotein levels of VLDL and LDL in hyperlipemic rats. The alleged mechanism is *P. niruri* Linn inhibits liver cholesterol biosynthesis, increases faecal bile acid excretion and increases plasma lecithin(12)

CONCLUSION

The treatment by *P. niruri* Linn at dose of 500& 1000mg/200g male rats for 7 days in hyperlipemic rats reduce TC and TG. The extract have potency to developed as a hypolipidemic agent

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Conflict of Interest

We have no conflict of interest in this research

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