SUMMARY

ANNA PRIANGANI USMAN. Antihypercholesterolemic Potency of Kayu Gabus bark (Alstonia scholaris, R. Br.) under supervision of Aisjah Girindra (Advisor), M. Anwar Nur, Norman R. Azwar, Soewondo Djojosoebagio (late), and Aunuddin (Members).

Kayu Gabus (Alstonia scholaris, R. Br.) grows in Indonesia and its water extract (so called infusarium) has been used as traditional medicine. Its activity as antihypercholesterolemic has not been studied scientifically.

The present study was carried out from 1995 to 1999. The aims of this study are to (1) determine the effect of infusarium and solvent fraction of Kayu Gabus bark on serum total cholesterol level of hypercholesterolemic Wistar male rat, (2) to study effect of Kayu Gabus bark infusarium and solvent fraction treatment on profile of LDL-cholesterol, HDL-cholesterol, triglyceride and fatty liver of Wistar male rat, (3) determine effect of solvent fraction treatment on endogenous cholesterol biosynthesis activity and on cholesterol secretion through feces of hypercholesterolemic Wistar male rat, and (4) to classify the compound in solvent fraction having antihypercholesterolemic activity.

The study is divided into several stages, that is, sample preparation, preliminary research, main research, and identification of compound in solvent fraction of Kayu Gabus bark having antihypercholesterolemic potency.
Sample used were boiled water extract (infusarium) of Kayu Gabus bark and its solvent fraction of Kayu Gabus bark. Infusarium sample was made by boiling Kayu Gabus in water until a half of water used evaporated. Kayu Gabus bark solvent fraction was made by extraction using various organic solvents.

The preliminary research was conducted to study the antihypercholesterolemic potency of Kayu Gabus infusarium. The research was done by feeding hypercholesterolemic rats with infusarium followed by determination of reduction of serum total cholesterol level. Reduction of the cholesterol level was compared by the standard diet. In addition, its effect on LDL-cholesterol, HDL-cholesterol, triglyceride, and fatty liver levels was determined.

The main research was done by feeding hypercholesterolemic rats with Kayu Gabus solvent fraction and compared the reduction of the rat cholesterol level with corresponding reduction observed on rat group fed with commercial cholesterol reducing drug (pravachol, lopid, and nicotinic acid), also with those given standard diet and high cholesterol diet. In addition, its effect on LDL-cholesterol, HDL-cholesterol, triglyceride, feces cholesterol levels, fatty liver levels, and activity of endogen cholesterol biosynthesis was determined. To study the antihypercholesterolemic activity via inhibition of endogen cholesterol biosynthesis, in vitro experiment was done by assaying hidroxymethyl glutaril-CoA reductase of liver microsome fraction. The data obtained were analyzed using Covariant Analysis. If there was significant effect of the treatment on cholesterol reduction, and of the increasing on feces cholesterol levels comparison of the mean average was followed by Duncan Test.
To identify compound having antihypercholesterolemic activity, phytochemical tests were conducted using color tests, column chromatography analysis, and thin layer chromatography analysis.

Results of preliminary research showed that treatment with Kayu Gabus bark infusarium of 4 mL/Kg BW/day during 14 and 28 days reduced serum total cholesterol level of hypercholesterolemic activity rat by 25.68 % (from 185,232 mg/dl to 133,154 mg/dl) and 37.23 % (from 185,232 mg/dl to 111,221 mg/dl).

Results of main research showed that substances of Kayu Gabus bark having antihypercholesterolemic activity was found in chloroform and water fractions. Antihypercholesterolemic activity of water fraction was higher than that of chloroform fraction. Treatment dosis with water fraction was 15.4 mg/Kg BW/day and treatment dosis with chloroform fraction was 5.6 mg/Kg BW/day. Cholesterol reducing activity of water and chloroform fraction were 61.57 % (from 214,954 mg/dl to 82,608 mg/dl) and 37.01 % (from 162,054 mg/dl to 102,063 mg/dl) after 28 days treatment. Antihypercholesterolemic activity of water fraction was higher than that of lopid or pravachol. Reduction in serum total cholesterol was accompanied by reduction in LDL-cholesterol and increase in HDL-cholesterol levels.

Results of feces cholesterol analysis indicated that feces cholesterol level of rat fed with water fraction was higher than feces cholesterol level fed with standard diet, high cholesterol diet and chloroform fraction and commercial cholesterol reducing drugs. In addition, treatment with water fraction could reduce fatty liver of hypercholesterolemic rat liver tissue.
Results of determination of antihypercholesterolemic activity indicated reduction in serum total cholesterol level of hypercholesterolemic rat fed by Kayu Gabus water and chloroform fractions was not due to inhibition in cholesterol biosynthesis. However, hypercholesterolemic activity of water fraction by excreted cholesterol through feces and by inhibition to first step of endogen cholesterol biosynthesis. But further study from mechanism of excreted cholesterol through feses is needed.

Results of identification tests showed that compound in Kayu Gabus bark having hypercholesterolemic activity in chloroform fraction was alkaloid and in water fraction was alkaloid and carbohydrate which suspect clasify in water soluble polysacharide. However, further study to determine type and chemical structure of these compounds are needed.