

CONCLUSIONS

In summary, this study revealed that *R. tomentosa* extracts contain several classes of various useful chemical compounds such as phenolics, and flavonoids that the body needed to improve or fight ailments such as hypercholesterolemia and atherosclerosis. In the antioxidant assays, extracts that were extracted using different solvents demonstrated different varying degrees of antioxidant activity. Such degree could be caused from the polarity of solvents that may extract different chemical components. According to result by HPLC analyses, *R. tomentosa* extract contains beneficial chemicals such as quercetin, tannic acid and gallic acid. The antioxidant activity was due to the existence of these compounds in *R. tomentosa* extract. On animal model study, this study was the first of its kind to the effect of *R. tomentosa* extract on the development of atherosclerotic induced on New Zealand White rabbits. The finding of this experiment showing that supplementation of 1% cholesterol was capable enough to significantly increase ($p < 0.05$) of both total cholesterol and LDL level efficiently in rabbit blood plasma. The supplementation of 50mg/kg/day of *R. tomentosa* extract was found to have a decreasing effect in total cholesterol and LDL levels as well as hypocholesterolemic effect and at the same time have an increasing effect in HDL level. This showed that the dosage of 50mg/kg/day of *R. tomentosa* fruit extract was able to reduce the severity of atherosclerosis and the formation of atherosclerotic plaque by making resistance to oxidation in lipid. The present study also found that TBARs-MDA level of *R. tomentosa* group was significantly lower ($p < 0.05$) compared to cholesterol group. The data suggested that the inhibitory effect of *R. tomentosa* extracts with regards to lipid peroxidation were related to the contents of antioxidant such as phenolic compounds in *R. tomentosa* extract. The effect of *R. tomentosa* extract was confirmed with histology study. Foam cells formations and atherosclerotic plaques were found in

the aortas of rabbits in cholesterol groups. However the degree of foam cells formation and atherosclerotic plaques in *R. tomentosa* group and simvastatin group were much less severe. This proved the ability of *R. tomentosa* extract and simvastatin drug to reduce or retarded the progression of atherosclerosis induced by dietary cholesterol. The results obtained from this study suggest that *R. tomentosa* can be used as source of natural antioxidants and supplement in nutritional and pharmaceutical industry. Further studies are needed to understand and validate on how *R. tomentosa* phytochemicals can contribute to maintenance of human physiological health, particularly its stability and bioavailability in human.