ABSTRACT

THESIS: The Effect of Red Yeast Rice on Antigen-Stimulated T Cell Function

STUDENT: Peter Joshua Ford

DEGREE: Master of Science

COLLEGE: Science and Humanities

DATE: May 2019

PAGES: 44

Red yeast rice (RYR) is a traditional Chinese medical agent that is produced by fermenting rice with *Monascus purpureus*, and has been used as an alternative treatment for a variety of diseases, including dyslipidemia and coronary heart disease. Statins are HMG-CoA reductase inhibitors that are most commonly used for the treatment of hyperlipidemia. In addition to their lipid-lowering properties, statins also display anti-inflammatory abilities and act by inhibiting T-cell activation and recruitment. RYR contains a group of naturally occurring polyketides known as monacolins that are similar in structure and are HMG-CoA reductase inhibitors. Monacolin K, also known as lovastatin, is in the highest concentration in RYR, which can reduce serum cholesterol levels similarly to statins. However, endogenous lovastatin levels in RYR are significantly lower than that of a prescribed statin regiment. Therefore, the goal of this study was to investigate the ability of RYR to alter T-cell functions, including proliferation, protein expression, and cytokine production.

Our results show that RYR treatment significantly decreased the proliferation of activated T-cells as compared to untreated controls. Additionally, results showed the RYR treatment may alter expression of key proteins involved in T-cell activation, stimulation, and regulation. A

significant decrease in the expression of CD25 was observed in RYR treated T-cells. A possible decrease in expression of CD45R was observed and a possible increase in expression of CD95 and CD178, though these results were not significant.