4036164 SCPM/M : MAJOR : PHARMACOLOGY ; M.Sc. (PHARMACOLOGY)

KEY WORDS : *GANODERMA LUCIDUM* / NITRIC OXIDE / ANTIOXIDANT ENZYMES / P388 LEUKEMIC CELL / CYTOTOXIC EFFECT

THANASAK TEAKTONG : THE EFFECTS OF *GANODERMA LUCIDUM* EXTRACTS ON P388 LEUKEMIC CELLS. THESIS ADVISORS : PORNTIP SUPAVILAI, Ph.D., PORNTIPA PICHA, Ph.D., KITTIMA SRIWATANAKUL, Ph.D., CHONGRAK PERMMONGKOL, M.Sc., 176 P. ISBN 974-662-901-8

GANODERMA LUCIDUM (GL) is an herbal medicine with antitumor activity capable of suppressing the growth of various tumors *in vivo*. The exact mechanism of GL against tumor cells is not clearly understood. The present study aimed to evaluate the direct cytotoxic effect of crude polysaccharide fractions (FO and FA) of GL extracts from both Thai and Japanese strains in P388 mouse leukemic cells (P388 cells). In addition, nitric oxide (NO) production and the activity of various antioxidant enzymes (superoxide dismutase (SOD), glutathione (GSH) peroxidase, and catalase) were measured in P388 cells both in the absence and in the presence of GL extracts.

GL had no cytotoxic effect, though it inhibited the growth of P388 cells in a concentration dependent manner. The potency of inhibition was FA Thai > FO Japanese > FA Japanese and FO Thai. No detectable amount of NO was observed either in the absence or in the presence of GL extracts. The SOD, GSH peroxidase and catalase activities in P388 cells were 19.04 U/mg protein, 0.00126 U/mg protein and 0.00000483 $sec^{-1}mg\ protein^{-1}$, respectively. FA Thai and FO Japanese fractions of GL extracts significantly increased SOD activity 29.78 % and 20.69 %, respectively. FA Thai and FA Japanese fractions significantly increased GSH peroxidase activity. None of the GL extracts altered catalase activity.

These data thus indicated that GL extracts exhibited no cytotoxic effect in P388 cells but they could inhibit the growth of P388 cells. The growth inhibition of P388 cells was not correlated with NO, GSH peroxidase and catalase enzymes. This inhibition may result from the increased SOD activity.