ABSTRACT

The Effect of Propolis on Macrophage Intracellular Killing to *Mycobacterium tuberculosis*

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This study was to evaluate the effect of propolis on intracellular killing capability of macrophages to *Mycobacterium tuberculosis* in vitro.

The major phagocytic cells involved in protection against *Mycobacterium tuberculosis* infection is activated macrophages, which it have an intracellular killing mechanism. Propolis contain of caffeic acid phenethyl ester (CAPE) that important role in activate macrophages to increase IL-1 and TNF-α producing, oxygen (H_2O_2) and nitrogen (NO) intermediate metabolite mechanism, that puspose increasing their capability to kill intracellular microorganism.

Peripheral blood mononuclear cells were isolated from healthy volunteers and tuberculosis patients. The macrophage cells were cultured 7 days in vitro and sixth day of incubation period, the cells were stimulated by 10 µg/ml propolis; thereafter infection with opsonized *Mycobacterium tuberculosis* H37Rv at seventh day. Intracellular killing assay was determined by colony counted [(Colony Forming Unit (CFU method)], acid fast bacilli stain, and Niacin Test 3 weeks after plating macrophage cell lysate on Middlebrook 7H10.

The result were no significant differences on intracellular killing capability between macrophages were obtained from healthy volunteers and tuberculosis patients without propolis treatment. On the other hand the intracellular killing capability of macrophages were obtained from healthy volunteers not different between propolis treated and untreated. Otherwise at 72 and 168 hours incubation, intracellular killing capability of macrophages were obtained from tuberculosis patients were different between propolis treated and untreated. Propolis treatment cause intracellular killing capability differences between macrophages were obtained from healthy volunteers and tuberculosis patients after 168 hours incubation ($p<0,05$).

Keywords : Propolis, intracellular killing, *Mycobacterium tuberculosis*, macrophage culture in vitro