

Stimulating Activity on Human Lymphocytes in vitro of Nori like Product (Geluring) Made from Gelidium sp. and Ulva lactuca Seaweeds

ABSTRACT

Seaweed has been reported to contain bioactive compounds that have an immunomodulatory activity, such as stimulating activity on human lymphocytes. Nori like the product from the mixture of *Gelidium* sp. and *Ulva lactuca* seaweed in this research named "geluring" may improve the immune system. This research is aimed to determine the stimulating activity of geluring by observing proliferation activity and interleukin-2 (IL-2) production of human lymphocyte by in vitro method. Two types of geluring were prepared, that were P1 (unseasoned geluring) and P2 (seasoned geluring) according to the commercial nori process with some modification. Gelurings were extracted with water and the extracts were added into lymphocyte cultures with various concentrations. The results showed that extracts of P1 and P2 gelurings could stimulate lymphocyte proliferation and IL-2 production significantly ($P < 0.05$) compared with the stimulations demonstrated by the cultures stimulated with PHA, RPMI, and extracts of unprocessed dried *Ulva lactuca* (UP0) but not significantly as compare to cultures added with unprocessed dried *Gelidium* sp. (GP0). Moreover, P2 geluring showed stimulation of lymphocyte proliferation and IL-2 production higher than P1 geluring and those of the control cultures. There was a positive correlation of proliferative activity with IL-2 production of the lymphocytes. The stimulation of lymphocyte proliferation and IL-2 production by P1 and P2 gelurings was significantly influenced by the concentration of the extracts. The concentration of 2.66 mg/ml culture showed the highest proliferation and IL-2 production of the cells. Base on this research, it can be concluded that geluring products made from the mixture of *Gelidium* sp. and *Ulva lactuca* stimulate the activity of lymphocytes, which indicates the potential to be used as a health food to improve the immune system.