

ABSTRACT

Name : William Halim Santoso

Study Program : Food Science and Nutrition

Thesis Advisor : Agus Budiawan Naro Putra, Ph.D.

Allergy rhinitis (AR), reported by the World Allergy Organization (WAO), is one of the highest prevalence allergies affecting 10-30% of all adults and up to 40% of children. In Indonesia, current evidence showed that the prevalence of AR is increasing, and globally, the AR treatment has cost a lot more than US\$200 million in most developed countries. *Averrhoa bilimbi* Linn. fruit (AF), or locally known as *belimbing wuluh*, has been scientifically proven to have anti-cancer, anti-hypertensive, anti-hyperlipidemic, anti-microbial properties, and can be utilized for type II diabetes treatment. However, the anti-allergy effect of AF has not been investigated. In this study, the anti-allergy effect of *Averrhoa bilimbi* Linn. fruit water extract (AFWE) was examined using RBL-2H3 cells. The cytotoxicity effect was determined by WST-8 assay, and anti-allergy effect was evaluated by β -hexosaminidase assay to investigate the β -hexosaminidase release and calcium assay to investigate the intracellular calcium concentration ($[Ca^{2+}]_i$). The results demonstrated that AFWE did not show any cytotoxicity at any given concentration. In addition, AFWE at 1.25 mg/mL showed sufficient inhibitory effect towards RBL-2H3 cells degranulation, but the inhibition was more potent with concentration of 2.5 mg/mL. Unfortunately, the properties of active substances from AFWE has not been analyzed. To conclude, this study indicated that AFWE has potential as an alternative treatment for anti-allergy.

Keywords: allergic rhinitis, Averrhoa bilimbi, anti-allergy, RBL-2H3, beta-hexosaminidase