ANALYTICAL METHOD DEVELOPMENT AND VALIDATION OF PHASEOLAMIN FROM WHITE KIDNEY BEAN (PHASEOLUS VULGARIS) EXTRACT INHIBITORY ACTIVITY AGAINST α-AMYLASE IN PT NUTRIFOOD INDONESIA

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ABSTRACT

Phaseolamin is an α-amylase inhibitor extracted from white kidney bean (Phaseolus vulgaris). Some researches show that phaseolamin has several functional effects such as enhancing weight loss, decreasing body fat mass, decreasing waist circumference, decreasing energy intake, decreasing insulin level in blood, and increasing carbohydrate tolerance in diabetics. Based on its functions, phaseolamin can be developed as a functional food ingredient. PT Nutrifood Indonesia is one of the companies that use phaseolamin in their product. However, to maintain the product quality, phaseolamin inhibitory activity has to be determined. This research aims to determine the optimum phaseolamin and α-amylase preincubation condition, develop an analytical method to measure phaseolamin inhibitory activity against α-amylase that can be used in PT Nutrifood Indonesia, and validate the method. The parameters to determine an optimum preincubation condition were phaseolamin concentration and preincubation duration. This research used Bernfeld method to measure the reducing sugars, product from the reaction between α-amylase and starch, that can be used in a calculation to determine the α-amylase activity with and without the phaseolamin. The phaseolamin inhibitory activity is expressed as percentage of inhibition. The analytical method should be validated so it can be used in the company. The parameter that was used to validate was precision. The result showed that 20 mg/ml concentration of phaseolamin and 60 minute preincubation gave the optimum preincubation condition. According to the result, Relative Standard Deviation (RSD) of analysis was smaller than 0.67 times RSD of Horwitz. It showed that the analytical method can be used to measure phaseolamin inhibitory activity precisely.

Keywords: phaseolamin, α-amylase inhibitor activity, Bernfeld method, validation