DIMERIZATION OF ASCORBIC ACID USING BROCCOLI (*Brassica oleracea*) PEROXIDASE CATALYST

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

DIMERIZATION OF ASCORBIC ACID USING BROCCOLI (Brassica oleraceae) PEROXIDASE CATALYST

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Peroxidase (EC 1.11.1.7) is a large family of heme oxydoreductase enzyme which can catalyze the oxidation reaction by using hydrogen peroxide. Peroxidase can be extracted from plants including broccoli (Brassica oleraceae). In the previous study, peroxidase has been used for dimerization and polymerize some phenolic compounds via oxidative coupling. Dimerization and polymerization can improve or deteriorate the characteristic and activity of the monomer. Ascorbic acid which is one of phenolic compounds, has high antioxidant activity. The reaction of hydrogen peroxide with broccoli peroxidase oxidized the ascorbic acid into dehydroascorbic acid. The dehydroascorbic acid could be dimerized via dehydration. The dimerization of dehydroascorbic acid decreased the antioxidant activity because the hydroxyl group of proposed dehydroascorbic acid dimer could not scavenge radicals anymore due to the structure changes.

Keywords: Broccoli peroxidase, Ascorbic acid, dehydroascorbic acid dimer, dimerization

DEDICATION

I dedicate this work for my country, Indonesia. I hope this work can be useful for the future and the next generation.

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