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ANTIOXIDANT PROPERTIES OF ONION (*ALLIUM CEPA L.*) AND POTATO (*SOLANUM TUBEROSUM L.*) DRIED SKIN

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ABSTRACT

Allium cepa L. and *Solanum Tuberosum L.* are very good vegetables as source of vitamins and other health benefits content most likely came from the antioxidant substances in them. However, most of the people did not realize the importance of these vegetables dried skin which has leaded them to removes the skin as a waste especially the onions. Also, the use of synthetic antioxidants can be harmful to human body compared to natural antioxidants as they contain substances which may cause adverse effect to human organs and have no nutritional qualities. Natural antioxidants involved higher production costs but provide multiple health benefits and readily accepted by human body. In this research, the antioxidant properties of onion and potato skins are to be determined. The antioxidants were extracted using solvent extraction method using methanol as the medium at the extraction temperatures and concentrations ranging from 50°C to 80°C and 30% to 60%. The antioxidant activities were obtained using the DPPH radical solution in which 80% methanol is used as the blank for determining its absorbance at a wavelength of 517 nm. The total phenolic content of the potato and onion skins were determined using the Folin–Ciocalteu method and the absorbance values were determined at 765 nm using the same blank. From the results obtained, the optimum conditions of the onion skin herb for the determination of total phenolic content and antioxidant activity were at the extraction temperature of 80.00°C with 35.52% methanol concentration. The amount of total phenolic content and antioxidant activity yielded at this condition for the onion skin were 89.85 mg/g and 65.39% in which, achieved the targeted amounts of 88.08 mg/g for total phenolic content and 65.39% for antioxidant activity. For the potato skin, the optimum condition for was at the extraction temperature of 60.38°C with 30.00% methanol concentration. The amount of total phenolic content and antioxidant activity yielded at this condition were 69.05 mg/g and 66.89%, in which, achieved the targeted amount of 65.39% for antioxidant activity. In conclusion, both onion and potato dried skin contain several kind of antioxidants such as gallic acid and quercetin which gave a significant impact to this study and the research was successful.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Onion (*Allium cepa L.*) is one the most widely used vegetables in the world. It is believed that onions were originated about 1,000 years ago in South Asia from some findings and records. They are consumed in many ways either cooked or in raw condition as an ingredient or seasoning of many dishes. Onion was an inseparable elements in India even though some of the population in the county did not eat Onion on religious forbiddance because of its shape and concentric. Onion provides many health benefits which reduced risk of diseases such as cancer, cardiovascular disease and many others. Different conditions and parts of Onion have different benefits of its properties such as antibiotic properties were found in sliced raw onions and cooked onions as food properties.

Potato (*Solanum tuberosum L.*) also one of the most widely used vegetables other than onion. Potatoes are originated around 7,000 years in South America. They usage of potatoes spread into major producing countries which China, Russia, Poland, Germany, Ukraine, India and USA. A potato contains almost all essential nutrients to us humans such as carbohydrate, vitamins and calcium. They are also used as ingredients in many dishes and eaten in many conditions including boiled, baked, fried and streamed. On these days, based on agricultural department of United State, potatoes are the most produced vegetable crop in United State and on the fourth rank in the world as rice is on the top chart with wheat and corn on the second and third rank of most consumed foods in the world (Szalay, 2013) (McNeill, 1949) .

Antioxidants are natural substances that are important on preventing damage on the cells. These substances are found in foods, mostly in fruits and vegetables. Examples of antioxidants in fruits and vegetables are beta-carotene, selenium and vitamins such as vitamin A, vitamin C and vitamin E. This is why having a diet involving large amount of vegetables and fruits intake is necessary to reduce the risk of dangerous diseases. The factors maybe because of another contents of the foods but it is confirmed that antioxidants plays the major role based on studies from researchers and scientists around the world. However, there's limitation of everything which is in this case too much consumption dose of antioxidants may lead to another diseases such as taking too much beta-carotene from smoking may increase