Chapter 7
Utilization of *Malus sylvestris* Mill Rind as Herbal Tea to Reduce Symptoms of Asthma

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Abstract

Tea is a kind of beverage made from fruits or herbs. Nowadays, some people consumed herbal tea to avoid some of disease. One of natural substance that can prevent some of diseases is quercetin. Quercetin is kind of flavonoid that is naturally found in many fruits and vegetables which can protect the body from several degenerative diseases, including the reduction of major symptoms of asthma. Quercetin content measurement was analyzed by using extraction method in ethanol solution and spectrophotometer. Apple (*Malus sylvestris* Mill) is one of fruits which contains abundant source of quercetin. Local apples from Indonesia which are represented by Rome beauty have high content of quercetin. Almost 50% quercetin contained on the rind of apple. Normally, people throw the rind of apple and doesn't consume it. My innovation is exploit the potential of rind of apple as raw material to make herbal tea to reduce symptoms of asthma. There are two simple and economical steps to make herbal tea from rind of apple. First, clean the rind of apple with water and the cut into small pieces. Second, bake for 1 hour and 15 minutes using a temperature of 40°C. In this review, have analyzed about the potential of quercetin contained in the rind of apple to treat asthma. Beside of that, this innovation has the potential to utilize waste into a natural medicine that are beneficial for health.

**Keywords**: Tea. Apple. Flavonoid. Quercetin. Asthma.

Introduction

Tea is a kind of beverage made from fruits or herbs. Nowadays, some people consumed herbal tea to avoid some of disease. Some benefits of tea like as an antioxidant, repairing damaged cells, smoothing the skin, slimming, prevent cancer, prevent heart disease, reduce blood cholesterol and blood circulation. Tea contain Polyphenols, Vitamin E, Vitamin A, and Vitamin C. Polyphenols in tea such as catechins and flavanols act as antioxidants to capture free radicals in the body. Free radicals contain in our body because of the polluted air environment and also from the food. Polyphenols also effective in preventing the growth of cancer cells in the body. A cup of tea contains as much as about 100-200 IU vitamin E. This amount will sufficient our Vitamin E needed each day. Vitamin E has the function to protect our skin and our hair. For Vitamin C, it works as antioxidant and as body immune. Whereas Vitamin A will maintain eye health.

Tea which is does not contain tea leaves called herbal tea. Apple is usually used as raw material of fruit herbal tea. The flesh of apples is the part as raw material to make herbal tea, while the skin will be removed. Whereas in the skin of apples contain a lot of important substances which is doesn’t exist in the flesh of apple. There are procyanidine B2, chlorogenic acid, epicatechin, and phloretine glycoside, quercetin, and triterpenoids. Quercetin is kind of flavonoid which can protect the body from several degenerative diseases by preventing lipid peroxidation process. Quercetin have ability to reduction symptoms of asthma. Asthma is a chronic disease involving the airways in the lungs. These airways or bronchial tubes, allow air to come in and out of the lungs. Usually people take medicine to heal the pain, but take medicine from chemicals can cause side effect and their not good for daily consume. There’s why my innovation is make a herbal tea from natural resources which is safe for our health. This herbal tea will made from rind of apple. This tea not just for people who got symptoms of asthma, but also for people who need to stay healthy. This herbal tea can reduce cholesterol, avoid cancer, and as a slimming tea. On the other side, this project will help to safe our environment because of utilization of waste into something new that useful for people.

There are a lot of variety of apples. Such as Rome beauty and Manalagi as local apples from Indonesia, and Fuji and Red delicious as import apples. Because of different variety, the amount of quercetin contained also different. Quercetin content measurement was analyzed by using extraction method in ethanol solution and
spectrophotometer. Rome beauty as local apple from Indonesia contain quercetin greater than the other. So, Rome beauty apple is the best choice to make this herbal tea.

**Result and Discussion**

This essay using 2 methods, they are library research and do experiment. There are two simple and economical steps to make herbal tea from rind of apple. First, clean the rind of apple with water and then cut into small pieces. Second, bake for 1 hour and 15 minutes using a temperature of 40°C. Temperature used is 40°C because it was the safe temperature for processing organic material without damage any important substance. For the result would be like :

<table>
<thead>
<tr>
<th>No.</th>
<th>Time</th>
<th>Initial Weight</th>
<th>Final Weight</th>
<th>Color</th>
<th>Darkness</th>
<th>Taste</th>
<th>Texture</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>15 minutes</td>
<td>200 gr</td>
<td>67 gr</td>
<td>Brownish green</td>
<td>Limpid</td>
<td>Tasteless</td>
<td>Mushy</td>
<td><img src="image1.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>2.</td>
<td>30 minutes</td>
<td>200 gr</td>
<td>58 gr</td>
<td>Brownish green</td>
<td>Limpid</td>
<td>Tasteless</td>
<td>Rather mushy</td>
<td><img src="image2.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>3.</td>
<td>45 minutes</td>
<td>200 gr</td>
<td>48 gr</td>
<td>Brownish green</td>
<td>Brownish</td>
<td>Middling</td>
<td>Quite dry</td>
<td><img src="image3.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>4.</td>
<td>1 hour</td>
<td>200 gr</td>
<td>40 gr</td>
<td>Brown</td>
<td>Quite concentrated</td>
<td>Good</td>
<td>Dry</td>
<td><img src="image4.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>5.</td>
<td>1 hour 15 minutes</td>
<td>200 gr</td>
<td>31 gr</td>
<td>Brown like a real tea</td>
<td>Concentrated</td>
<td>The best one, apple taste was very strong</td>
<td>Dry</td>
<td><img src="image5.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>6.</td>
<td>1 hour 30 minutes</td>
<td>200 gr</td>
<td>25 gr</td>
<td>Blackish</td>
<td>Too concentrated</td>
<td>Bitter</td>
<td>Charred</td>
<td><img src="image6.jpg" alt="Picture" /></td>
</tr>
<tr>
<td>7.</td>
<td>1 hour 45 minutes</td>
<td>200 gr</td>
<td>12.5 gr</td>
<td>Black like coffee</td>
<td>Colorless</td>
<td>Bitter</td>
<td>Charred</td>
<td><img src="image7.jpg" alt="Picture" /></td>
</tr>
</tbody>
</table>

From that data on table, shown a bar chart as follows :

**Chart 1. Bar Chart Comparison Time Frequency Distribution and Weight**

![Chart 1. Bar Chart Comparison Time Frequency Distribution and Weight](chart1.jpg)
From the table and chart above, known that 1 hour 15 minutes is the best time to produce herbal tea from rind of apple. It gives the best taste and color. While in the span of 1 hour 30 minutes, apple flavor and density being nearly equal and slightly charred, the tea flavor and aroma getting worse. In the span of 1 hour 45 minutes, the rind of apple was very charred apple and cannot be consume.

**Conclusion**

Rind of apple contain quercetin which is can be utilize as herbal tea to reduce symptoms of asthma. Rome beauty apple as one of local apple from Indonesia has been choosen as the raw material to make this herbal tea. Rome beauty has been choosen because the rind contain quercetin higher than the other apple variety. There are two simple and economical steps to make herbal tea from the rind of apple. First, clean the rind of apple with water and then cut into small pieces. Second, bake for 1 hour and 15 minutes using a temperature of 40o C.

Because it made from waste, it help to safe our environment. Herbal tea made from the rind of apple not only for people who got the symptoms of asthma, but also for they who want to stay healthy. This herbal tea can reduce cholesterol, avoid cancer, and as a slimming tea. This herbal tea is safe for daily consume because 100% made from natural resource without any chemicals.

**References**