

## Conference Paper

# Comparison Between Different Herbal Formulations of Roses and Their Therapeutic Potential

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## Abstract.

Roses are one of the most popular flowers in the world, not only because of their beauty but also because they have medicinal properties. Drugs developed from roses must be supported from various parties. Roses have active components that can be used to improve public health, such as anthocyanins, tannins and other active compounds. Making the right rose water herbal mixtures will help filter out the active substances according to the expected therapeutic effect. The manufacture of herbal mixtures of roses can vary, namely, infusions, extracts and rose oil. These three variations require different procedures. The three herbal formulations can provide an initial condition of the content of the active substances in the roses. The results of the rose infusion gave a red color in a short time, while the maceration of the extract with ethyl alcohol, methanol and hexane gave a varied color appearance, while the identification of rose oil using water distillation did not show any filtered oil. The comparison of the three preparations shows that the herbal formulations can be done in a simple way and the formulation that gives the best results is rose water infusions that produces rose water.

**Keywords:** herbal preparation, rose infusion, rose oil, rose extract

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## 1. INTRODUCTION

Indonesia is a tropical country that has the second largest biodiversity in the world after Brazil. Indonesia has more than 30 000 plant species, which are 80% of the world's plant species and 90% of Asia's plant species. More than seven thousand species of plants in Indonesia are used by the community as medicine and there are still many medicinal plants that have not been utilized in Indonesia. Parts of plants used as medicinal ingredients can be in the form of roots, stems, leaves, flowers, tubers or maybe all parts of the plant can be used as ingredients for traditional medicines [1,2].

The rose is the most popular ornamental flower in the world and has been cultivated since the Middle Ages. Roses (*Rosa damascena*) can be classified into two types, namely botanical species that grow naturally in the wild and hybrid varieties that have generally

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been crossed. Over time, the diversity of roses is increasingly diverse in terms of shape, color, smell and other agronomic properties. It is known that there are about 24,000 varieties of roses and most of these are hybrids. *Rosa damascena* Mill is an aromatic plant and also an important medicinal raw material which can produce rose oil, rose water and rose concentrate which can be commercialized [3].

Roses are known to have various medical effects, in addition to being cosmetic ingredients, they are also natural ingredients that are high in antioxidants and good anti-aging substances, and can also increase the tone of the skin. Industries that are developed from the basic ingredients of roses, such as perfume making using rose products such as rose essential oil, rose water or rose extract. Rose water can also be used as a very important aromatic ingredient and can provide a good anti-pain effect, even for mothers who are about to give birth. Rose water or oil is also believed to have a good anti-anxiety or anti-anxiolytic effect [4,5].

Rose oil can be used as a skin moisturizer, acne medication, even aromatherapy for relaxation and reducing anxiety. Roses like other natural ingredients contain active substances in them which can be divided into primary metabolites and secondary metabolites. In general, chemical compounds or active substances contained in roses can be divided into two major parts, namely polyphenols and volatile terpenes. Based on the literature, it is known that the essential oil of *R. damascena* contains many monoterpene alcohols such as citronellol, geraniol, nerol, linalool and phenylethyl alcohol. Polyphenols in roses have a role in the defense mechanism of roses, give color and attract insects for the pollination process [5].

## 2. METHODS

### 2.1. Rose Water Making

Making rose preparations can be done with various techniques such as making rose water, rose oil and also rose water maceration. Rose water can be made with a simple technique, namely by boiling in the manufacture of rose infusion. Boiling is the easiest and fastest way to make rosewater. The materials needed are fresh rose petals, distilled water (distilled water), a filter, an infusion pot, a measuring cup, and a closed container such as a bottle. Fresh rose petals that have been cleaned add water until submerged. Use distilled or distilled water. Place the infusion pot on the stove over low heat. Cover until boiling. Leave it on for 15 to 30 minutes or until the petals lose color or the petals turn sparse. Turn off the heat and let it cool completely, then strain it using a sieve or a

soft cloth to separate the petals and rosewater. When you're done, remove the petals. Rose water is stored in a closed bottle or container [6].

## 2.2. Identification of Rose Oil

Identification of rose oil using the steam distillation method, the main purpose of which is to flow steam to separate the oil from rose simplicia. This method begins with maceration of rose petals with water and placed a support plate with holes in which the steam flows. Then the water in the boiler is heated until it evaporates. During the distillation operation, water vapor will flow through the sidelines of the raw material and heat the oil contained so that it evaporates and is carried away with the water vapor. This mixture of water vapor and oil vapor is then condensed in the condenser until it is completely melted. Because the oil and water are insoluble, it can easily be separated by decantation. The oil and water vapor that comes out of the distillation column is then condensed in the condenser and the sample that comes out is measured for the volume of oil and water and recorded every two minutes. This process takes about 2.5 hours [3,6].

## 2.3. Maceration of Rose Flower Extract

The manufacture of rose flower extract begins with a maceration process using certain solvents such as water, alcohol or hexane. Fresh rose petals are separated from the stem by removing it and then cut into small pieces, weighed and then put into a beaker glass. The rose flower simplicia then goes through a maceration/soaking process with certain solvents, such as water, ethanol and N-Hexane with a ratio of 1:3. Maceration was carried out for 12 hours after previously being stirred for 1 minute manually at room temperature and without being exposed to light (in a closed and dark place). The maceration process is carried out in a closed and dark place with the aim of avoiding light or lighting, so that the process can take place effectively. The maceration results are then filtered to produce a dilute extract. Maceration was carried out three times within 3 x 24 hours and the aqueous extract was then evaporated and concentrated to form a concentrated extract [7].

## 3. RESULTS

Rose flower simplicia can be used in fresh or dry dosage forms. In this study, fresh roses were used that were just picked from the Center for ornamental flower cultivation from

Cihideung Village, Parongpong District, West Bandung Regency. The rose used is *Rosa Damascena* Mill which is red (Fig. 1).



**Figure 1:** Preparation of fresh roses.

In the results of making the infusion, it can be seen that the rose water infusion shows a fresh red color and the rose water can last for one week at room temperature and can be stored in the refrigerator for up to one month without changing color. The manufacturing process is very easy and does not require difficult materials. Identification of rose oil by steam distillation showed that no rose oil was identified during the two-hour process carried out (Fig. 2).



**Figure 2:** Rose oil identification with distillation.

While the results of maceration with water, ethanol and N-Hexane showed differences in the color of the resulting solution after being filtered. Maceration with water showed a stronger red color than ethanol and N-Hexane.



**Figure 3:** Differences between Maceration of roses with water, ethanol and N-Hexsan solvents.

The difference in maceration results with three different solvents showed a more concentrated color in the aqueous extract, followed by ethanol and then N-Hexane (Fig. 3). Furthermore, the process of making the extract was carried out for three days and then concentrated by evaporation and also the use of a water bath, until finally a more concentrated extract was formed in the form of a paste.

## 4. DISCUSSION

The manufacture of herbal preparations from roses can be influenced by various factors, including the content of active substances contained in herbal preparations, the solvents used and the techniques used to make these

preparations. Roses contain substances that are both polar and non-polar, so the results seen macroscopically show significant differences when using water, ethanol and N-Hexane as solvents. From the results obtained, it can be seen that the number of polar active substances seems to show a higher number than non-polar compounds [3,8].

In general, chemical compounds or active substances contained in roses can be divided into two major parts, namely polyphenols and volatile terpenes. Polyphenols in roses have a role in the defense mechanism of roses, give color and attract insects for the pollination process. One of the polyphenols found in rose flower polyphenols is tannin. Tannins are polyphenolic compounds in natural ingredients consisting of hydrolyzed and condensed tannins. Hydrolyzed tannins are generally derivatives of gallic acid or ellagic acid, and condensed tannins (proanthocyanidins) have also been reported. Flavomoids are also widely found in roses, such as flavonols, and quercetin

and kaempferol derivatives. Anthocyanins, also found in red and pink roses. Other active substances are cyanidin, pelargonidine, peonidin aglycones and glycosides [5].

Rose oil or rose essential oil is one of the most commercially available rose preparations, but many components are soluble in water, so the manufacturing process needs to be extracted using a slightly different distillation method. In this study, there were many factors that might influence so that identification using steam distillation did not show the presence of rose oil. Roses contain about 0.02% essential oil which is called the first oil or direct oil, so to extract rose oil seems to require a lot of rose preparation in the manufacturing process. Because the proportion of rose oil is very small from its fresh preparation, it causes rose oil to have a high economic value [4,5].

Rose water can be made with a home industry or a large industry. In rose water, the main components of rose essential oil with ethanol and n-hexane solvents, respectively, were phenyl ethyl alcohol (2.73%) and (31.69%). The yield of maceration of rose flower oil with ethanol solvent was 8.76%, while the n-hexane solvent yielded 0.34 % [8]. One of the polyphenols found in rose flower polyphenols is tannin. Tannins are polyphenolic compounds in natural ingredients consisting of hydrolyzed and condensed tannins. Hydrolyzed tannins are generally derivatives of gallic acid or ellagic acid, and condensed tannins (proanthocyanidins) have also been reported. Flavonoids are also widely found in roses, such as flavonols, and quercetin and kaempferol derivatives. Anthocyanins, also found in red and pink roses. Other active substances are cyanidin, pelargonidin, peonidin aglycones and glycosides [9,10].

The process of determination and standardization of rose flower preparations must be carried out further, both microscopically, phytochemical tests and other active compound tests that can be carried out to ensure the profile of the available rose preparations.

## 5. CONCLUSION

The choice of solvent and the technique of making rose preparations will determine the type of active compound that is interested in the available rose preparations. In the end this will affect the therapeutic effect that will arise from the use of these rose preparations.

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