

# The Effectiveness of Cabe Jawa (*Piper Retrofractum*, Vahl) Essential Oil Aromatherapy to Patient's Blood Pressure, Pulse Rate, and Respirations Before Tooth Extraction

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## ABSTRACT

**Background:** Anxiety before tooth extraction can be one of obstacles for the operators to perform cure procedure. One way that can be performed to reduce the anxiety is by using of cabe jawa (*Piper retrofractum*, Vahl) aromatherapy. Linalool contained in essential oil of cabe jawa affects the activity of brain function that passes the nerves associated with the sense of smell and related to psychological conditions such as anxiety.

**Aim:** To know the effect of cabe jawa aromatherapy for relieving patient's anxiety before tooth extraction.

**Method:** This research was quasi experiment with one group pre-test and post-test research design, there were 15 respondents undergoing tooth extraction procedure using physiological evaluation such as blood pressure, pulse, and respiration to measure anxiety changes.

**Results:** There was decrease in blood pressure of 8, 3/4, 6 mmHg, a pulse of 2,74 times/minute, and respiration of 3,47 times/minute.

**Conclusion:** The patient's blood pressure, pulse, and respiration were affected by inhaling cabe jawa aromatherapy. Aromatherapy made from cabe jawa essential oil was expected to be used as one of methods to reduce anxiety.

**Keywords:** Cabe jawa, anxiety, linalool, tooth extraction, aromatherapy

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## INTRODUCTION

One of the treatments in dentistry is tooth extraction. Although it is commonly conducted, however, patients tend to remain anxious to undergo this treatment. Factors causing this anxiety include fear to dentists, dental appliances to use such as syringes, pliers, elevators (beins), and the pain.<sup>1</sup> Anxiety is one type of emotional disturbance related to unexpected situations or considered dangerous. Anxiety is accompanied by some physiological signs i.e., Sweating, increased blood pressure, increased pulse, palpitations, dry mouth, diarrhoea, muscle tension and hyperventilation<sup>2</sup>. Pre-operative anxiety is subjective, conscious anxiety and tension accompanied by stimulation the autonomic nervous system causes an increase in blood pressure, heart beat rate, and respiration rate. This is very dangerous because the high heart beat rate and blood pressure will aggravate the work of the cardiovascular system and increase the need for oxygen and heart work<sup>3</sup>.

In overcoming anxiety an effective and efficient treatment is required. One alternative that can be tried is by using aromatherapy. It has been widely used as one of the treatment techniques that use

fragrances from the essential oils of a plant. Linalool content of essential oils of *cabe jawa* (*Piper retrofractum*, Vahl) affects the activity of brain function through the nervous system associated with the sense of smell and the recovery of the patient's psychological condition<sup>4</sup>.

Based on the results of the study, the effectiveness of aromatherapy on anxiety levels prior to surgery with spinal anesthesia showed that essential oils from aromatherapy has some benefits i.e. providing relaxation, reducing anxiety levels and improving mood.<sup>5</sup> The above description becomes the basis of the authors to conduct research on the effectiveness of the essential oil aromatherapy of *cabe jawa* to decrease patients' anxiety prior to dental extraction.

## METHODS

The type of the research is quasi experiment usually conducted to know the existence or effect of "something" which is imposed on the subject under study by looking for the effect of certain treatment to another with the condition of under control. The research design used is one group pre-test and post-test design, a technique to know the effect before and after giving treatment<sup>6</sup>.

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This research was conducted in December 2016 until January 2017 in Laboratory of Crops Processing Engineering (CPE) and at the Oral Surgery Department of Dental Hospital, Faculty of Dentistry University of Jember. The criterion of samples were patients of oral surgery aged 17-40 years of which teeth, either from upper or lower jaws, would be extracted, willing to be the subject of research by signing informed consent, never performed tooth extraction and had no allergies. The sampling technique used was purposive sampling to obtain 15 patients.

The research method used was to measure blood pressure, pulse, and respiration rate of patient before provided *cabe jawa* aromatherapy, and subsequently compared with measurement of blood pressure, pulse and respiration rate of the patient after provided *cabe jawa* aromatherapy for 15 minutes with essential oil content of 1.75ml that had previously been dripped into the patient's mask. Aromatherapy was made from *cabe jawa* essential oil. After the data collected, One Way Anova statistical test was performed to observe homogeneity of the data, and normality test using *Kolmogorov-Smirnov test*, then *Paired sample t-test* was used as difference test.

## RESULTS

The result of the research were data of blood pressure, pulse, respiration rate before and after giving aromatherapy of *cabe jawa* presented in Table 1, Table 2 and Table 3. Then the research data were tested for their difference test with *Paired Sample T-test* in Table 4.

Table 1. The measurement result of mean of blood pressure before and after inhalation of *cabe jawa* aromatherapy

Blood Pressure	Before	After	Changes
Systolic	114,40 mmHg	106,07 mmHg	8,33 mmHg
Dyastolic	73,73 mmHg	69,13 mmHg	4,6 mmHg

Table 2. Mean of pulse rate measurements before and after inhalation of *cabe jawa* aromatherapy

Pulse		
Before	After	Changes
86,27 times/minute	83,53 times/minute	2,74 times/minute

Table 3. Mean of respiration rate before and after inhalation of *cabe jawa* aromatherapy

Respiration rate		
Before	After	Changes
17,27 times/minute	13,80 times/minute	3,47 times/minute

Table 4. Test of Difference Paired T-test

	Mean	Std. Deviation	p
Ssystolic Blood Pressure	8,33	7,12	0,00
Dyastolic Blood Pressure	4,60	7,52	0,03
Pulse	2,73	4,98	0,05
Respiration Rate	3,46	2,17	0,00

## DISCUSSION

Anxiety is one type of emotional disturbances associated with unpredictable or dangerous situations.<sup>2</sup> Patients anxiety during tooth extractions can have a negative impact on dental procedures<sup>7</sup>. These negative effects can lead to increased blood pressure during tooth extraction leading to bleeding<sup>8</sup>. In addition, preoperative anxiety conscious anxiety and tension accompanied by stimulation the autonomic nervous system causes an increase in blood pressure, heart beat rate, and respiration rate. This is very dangerous because the high heart beat rate and blood pressure will aggravate the work of the cardiovascular system and increase the need for oxygen and heart work. Anxiety and fear of tooth extraction procedures can also cause patients to avoid or delay dental care thus it can affect performance and success of tooth extraction<sup>7</sup>.

This study was conducted on 15 patients who would undergo tooth extraction from December 2016 until January 2017 at the Dental Hospital Faculty of Dentistry University of Jember. The results demonstrated that there was a change in the patients' blood pressure before and after having the aromatherapy of 8.33/4.6 mmHg reaching 11 of 15 research subjects. It was consistent with the results of research conducted by *Merinchiana* in 2015 on anxiety images of dental extraction patients before and after inhalation of lavender aromatherapy that there was a change of 45% from the total number of dental extraction patients who had been given aromatherapy prior to tooth extraction.<sup>9</sup> In addition, it was also supported by *Melani Tambunan's* research stating that on the patients suffering from high blood pressure subjected to the research, inhalation of rose essential aromatherapy resulted in a change in the mean of blood pressure before and after inhalation<sup>10</sup>.

The results through the measurement of subsequent physiological signs conducted by examination of pulse demonstrated that there was a change on the pulse of the subjects before and after administering aromatherapy i.e., 2.74 times/minute. *Beatrix* in her research said that the increase in pulse rate was caused by the feeling of fear of the patient toward dental equipment and the risk that would occur during extraction.<sup>11</sup> While other studies of anxiety

images of dental extraction patients before and after inhalation of Lavender aromatherapy indicates there is a change in pulse rate in patients who have inhaled aromatherapy i.e., 3.5 times / minute<sup>9</sup>.

The results of respiration rate measurement also showed a change before and after aromatherapy was administered i.e. 3.47 times / minute. The results of this study was similar to some research results summarized by Dewi *et al* in research on the effect of aromatherapy inhalation to the anxiety level of patients with chronic renal failure who underwent hemodialysis. It is stated that the content in essential oil can affect the activity of brain function through the nervous system related to the sense of smell. This response will stimulate the increase of neurotransmitters associated with the recovery of psychological conditions e.g. emotions, feelings, thoughts, and desires. The content of linalool acetate as the main active ingredient is considered able to relax the working system of nerves and tensed muscles by lowering the work of the sympathetic nerves when someone has anxiety. The sympathetic nerves that carry the vasoconstrictor nerve fibers will experience a decrease in performance when linalool acetate enters the body. This condition results in decreased production of epinephrine released by vasoconstrictor nerve tips thus anxiety symptoms e.g., increased blood pressure, pulse frequency and respiration decrease<sup>4</sup>. In addition to the study, the effectiveness of aromatherapy on anxiety levels before surgery with spinal anesthesia showed that essential oils of aromatherapy can provide relaxation and reduce anxiety levels<sup>5</sup>.

## CONCLUSION AND SUGGESTION

Based on the research, it can be concluded that there are beneficial effects of aromatherapy of essential oil of *cabejawato* the patients' blood pressure, pulse and respiration before tooth extraction. Thereby, the information from the research can be used as a basis in developing a more effective and efficient alternative to overcome the anxiety level of patients, especially before tooth extraction at the Dental

Faculty, University of Jember, and it may be used as a reference for further research.

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