



## Ginger and Citrus Aroma Therapy for Servical Cancer Patients Post Chemotherapy

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### ARTICLE INFO

#### Article history:

Received 13 February 2021

Accepted 4 August 2021

Published 5 September 2021

#### Keyword:

Aromatherapy  
Post Chemotherapy  
Citrus and Ginger

### ABSTRACT

Nausea and vomiting after chemotherapy is one of the effects that can reduce the patient's spiritual biopsychosocial factor. The first purpose of this study was to determine the effect of aromatherapy inhalation in ginger and citrus. The second one to compare the value of both citrus and ginger aromatherapy to reduce effect of nausea and vomiting. This research was an experimental study with four solomon group designs. A sample of 68 respondents were divided into four groups by purposive sampling. Ginger aromatherapy showed  $p < 0.002 < \alpha 0.05$  and citrus aromatherapy showed  $p < 0.009 < \alpha 0.05$ . These results indicate that both aromatherapies can reduce nausea and vomiting. The second analysis used the Mann-Whitney statistical test to compare the effect on the intervention group of each inhalation aromatherapy. The results showed that the  $p$ -value ( $0.192 > \alpha (0.05)$ ), which means that statistically there is no difference in the average score of nausea and vomiting between the intervention groups of ginger aromatherapy and citrus aromatherapy, but ginger aromatherapy can reduce nausea and vomiting by a difference mean 3.18 greater than citrus aromatherapy. Nurses can use ginger and citrus aromatherapy as an alternative solution to reduce nausea and vomiting in improving the patient's physical condition.

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### ABSTRAK

#### Kata kunci:

Aromaterapi  
Pasca Kemoterapi  
Jeruk dan Jahe

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DOI: 10.30604/jika.v6iS1.760

Mual dan muntah pasca kemoterapi merupakan salah satu efek yang dapat menurunkan faktor biopsikososial spiritual pasien. Tujuan penelitian yang pertama adalah untuk mengetahui bagaimana pengaruh inhalasi aromaterapi dan juga membandingkan nilai masing-masing inhalasi baik aroma terapi jeruk maupun jahe terhadap penurunan efek mualmuntah. Penelitian ini merupakan penelitian True eksperimen dengan desain empat kelompok solomon. Sampel sebanyak 68 responden yang dibagi menjadi empat kelompok dengan cara purposive sampling. Hasil penelitian menunjukkan adanya penurunan mual dan muntah baik pada inhalasi aromaterapi jeruk dan jahe. Aromaterapi ginger menunjukkan  $p < 0.002 < \alpha 0.05$  dan Aromaterapi citrus menunjukkan  $p < 0.009 < \alpha 0.05$ . Hasil ini menunjukkan bahwa kedua aromaterapi ini dapat menurunkan mual dan muntah. Analisis data kedua menggunakan uji statistik mann-whitney untuk membandingkan pengaruh pada kelompok intervensi masing-masing in halasi aromaterapi. Hasil menunjukkan bahwa  $p$ -value ( $0,192 > \alpha (0,05)$ ), yang berarti secara statistik tidak terdapat perbedaan rata-rata skor mual muntah antara kelompok intervensi aromaterapi jahe dan aromaterapi jeruk, akan tetapi aromaterapi jahe dapat mengurangi mual dan muntah dengan selisih rerata 3,18 lebih besar dibandingkan aromaterapi jeruk. Hal ini menunjukkan bahwa aromaterapi jahe lebih

dapat menurunkan mual dan muntah pascakemoterapi. Perawat dapat menjadi kanaromaterapi jahe dan jeruk sebagai solusial ternatif untuk mengurangi mual dan muntah dalam memperbaiki kondisi fisiknya.

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## INTRODUCTION

Palliative cancer patients is a person who need treatment to improving quality of life by early identification and orderly assessment as well as management of pain, nausea, vomiting and other problems in physical, psychosocial and spiritual (Cancer et al., 2012; Collins et al., 2015; Peppercorn et al., 2011). Aspects that need to be considered to improve the quality of life of palliative patients are to pay attention to the biopsychosocial spiritual aspects of palliative patients (Adhisty, 2018).

Human Papilloma Virus (HPV) is a cause of cervical cancer, with types 16 and 18 as the biggest causes of this cancer (Jung et al., 2015). The prevalence of cervical / cervical cancer in 2012 was 26 per 100,000 women (Cancer et al., 2012). Cervical cancer with the data also estimates that the prevalence rate in 2012 will be 528,000 cases with a mortality rate of 266,000. Indonesia as a developing country recorded the number of cases of cervical cancer in Advanced Outpatient Services (RJTL) reaching 12,820 cases while in Advanced Level Inpatients (RITL) was recorded at 6,938 cases (Kementerian Kesehatan Badan Penelitian dan Pengembangan Kesehatan 1, 2018).

Management therapy in cancer patients consists of surgical techniques, chemotherapy and radiotherapy, with the combination or singulat treatment. The effects side on treatment can be felt by cervical patients. The Effects after chemotherapy such as nausea and vomiting are among the physical symptoms felt by the patient (Adhisty et al., 2019; Serena et al., 2015). Overcoming this effect, physicians provide several measures to overcome nausea and vomiting by using anti-emetic drugs in patients post-chemotherapy.

Supporting therapies that can reduce of nausea and vomiting is a Complementary or non-pharmacological in post-chemotherapy patients. The example of complementary therapy can be relaxation, guided imagery, distraction, hypnosis and aromatherapy. Aromatherapy is a one of

complementary to reduce the intensity of nausea and vomiting post chemotherapy. In line with this it is stated that complementary measures with aromatherapy can reduce nausea and vomiting after chemotherapy (prasetyo, 2014). Chemotherapy patients will get stimuli that will affect their sense of smell by stimulating the sympathetic nervous system and the nucleus raphe (Hodge et al., 2014), thereby reducing the side effects of chemotherapy. The purpose of this study was to determine the effectiveness of citrus and ginger aromatherapy in reducing nausea and vomiting in patients with cervical cancer post chemotherapy.

## METHOD

This research was a quantitative research. Using a True-Experiment research design with the four Solomon groups. Grouping is done by randomization in a single blind. A sample of 68 cervical cancer patients with the non-probability sampling using purposive sampling with screening PPS criteria  $\geq 50$ , patients get chemotherapy therapy in their sessions, respondents get anti-emetic drugs. The questionnaire uses respondent characteristics, Rhodes INVR questionnaire in Rambang Room 2.2 oncology Dr. RSUP Mohammad Hoesin Palembang. This study was approved by the Health Research Ethics Commission No. 236/kepkrsmhfkunsri/2018. Respondents selected in this study will be included in their respective groups using a random system. Respondents in the intervention group did not know in advance which group they would be in (single blind). after the intervention using citrus or ginger aromatherapy for 5 days with 3 times in each group, data will be analyzed using Wilcoxon test and one way ANOVA to determine the effectiveness that occur.

## RESULTS AND DISCUSSION

**Table 1**  
**Frequency Distribution of Respondent Demographic Data in the Intervention Group and Citrus Aromatherapy Control Group**

Variable	Intervention Group		Control Group	
	(n)	(%)	(n)	(%)
Years				
≤ 30	2	11,8	2	11,8
31-50	8	47,1	7	41,2
51-65	6	35,3	7	41,2
> 65	1	5,9	1	5,9
Weight				
31-40 Kg	0	0	0	0
41-50 Kg	2	11,8	8	47,1
51-60 Kg	6	35,3	7	41,2
≥ 61 Kg	9	52,9	2	11,8
Qualification				
No training	0	0	1	5,9

Elementary school	7	41,2	6	35,3
Junior high school	4	23,5	4	23,5
Senior high school	4	23,5	5	29,4
Bachelor's degree	2	11,8	1	5,9
Occupation				
Housewife	7	41,2	6	35,3
General employees	3	17,6	6	35,3
Civil servants	2	11,8	4	23,5
The others	5	29,4	1	5,9
Cancer stage				
I	0	0	5	29,4
II	6	35,3	4	23,5
III	7	41,2	8	47,1
IV	4	23,5	0	0
Long suffered				
1-6 month	7	41,2	6	35,3
7-12 month	4	23,5	4	23,5
>12 month	6	35,3	7	41,2
Metastasis				
Yes	12	70,6	9	52,9
No	5	29,4	8	47,1
Treatment				
Radiotherapy	0	0	0	0
chemotherapy	17	100	17	100
Surgery	0	0	0	0

Based on the univariate analysis in tabel 1, it was found that any characteristic of the responden such as: the age range of respondents, body weight, education level, occupation, cancer stage, long suffered, metastasis, and treatment. The majority of

respondents in the intervention and control aromatherapy citrus group were in stage III 41.2%, in univariate we can conclude that the respondents have the same characteristics so that this study is very homogeneous.

**Table 2**  
**Analysis in the pre and post citrus intervention groups**

	N	Mean	Std. Deviation	Min	Max	Median	sig
Pre Intervention	17	13.76	5.964	8	27	10.00	0.009*
Post Intervention	17	9.82	4.187	8	24	8.00	

\*p<.05

Bivariate analysis for the second analysis, used the Wilcoxon test to determine the effect of citrus and ginger aromatherapy on intervention or control groups. Based on research in bivariate anylisis in table 2, we found for the

citrus aromatherapy intervention group was sig (0.009) <alpha (0.05), so it can be concluded that there are differences and influential in the score of nausea and vomiting before and after using citrus aromatherapy.

**Table 3**  
**Analysis in the pre and post ginger intervention groups**

	N	Mean	Std. Deviation	Min	Max	Median	sig
Pre Intervention	17	16.18	5.769	8	26	18.00	0.002*
Post Intervention	17	9.06	0.966	8	11	9.00	

\*p<.05

.Analysis of the ginger intervention group was a sig (0.002) <alpha (0.05), So, it can be concluded that both

ginger and citrus interventions have advantages in reducing nausea and vomiting in post-chemotherapeutic patients.

**Table 4**  
**The Differences in Vomiting Nausea in the Citrus Aroma Intervention Group and the Aroma Ginger Intervention Group**

Intervention	N	Average	SD	p-value
Citrus Aromatherapy	17	3,94	1,777	0,192*
Ginger Aromatherapy	17	7,12	4,803	

\*p>.05

The final test results in table 4 showed an average difference in the intervention group given citrus scent that is equal to 3.94 with a standard deviation of 1.777. While the mean difference in the ginger aroma intervention group is 7.12 with a standard deviation difference of 4.803. Using the mann-whitney statistical test (alternative independent t test) shows that the p-value (0.192)> alpha (0.05), which

means that statistically there is no difference in the average score of nausea and vomiting between the ginger aromatherapy intervention group and the citrus aromatherapy. However, if it is seen based on the difference between the difference between the average of the two intervention groups, which is 3.18 points. It can be concluded that interventions using ginger scent are more

effective in treating nausea and vomiting than interventions using citrus aromatherapy.

Treatment through chemotherapy is a process that uses anti-cancer drugs or cytokines in the form of liquid pills or capsules or through infusions that aim to kill cancer cells through the mechanism of chemotaxis, not only cells in the affected part of the cancer but also throughout the body (Isenring, 2016). Side effects of chemotherapy can also be caused by non-specific effects of cytotoxic drugs that can inhibit the proliferation of not only tumor cells but normal cells that are nearby. These side effects will directly affect the body pathologically (Isenring, 2016).

Side effects of chemotherapy that will be felt by patients are weakness (95%), fatigue (90%), nausea (77%), hair loss 76% and vomiting (75%) (Aslam et al., 2014). Biopsikososial spiritual will be handled by the palliative patient as a effect of chemotherapy. Inhalation mechanism using ginger and citrus aromatherapy can reduce nausea and vomiting in patients undergoing chemotherapy

The mechanism of therapy through inhalation has a faster effect than other mechanisms (Ningsih, 2011). The mechanism of aromatherapy action is through the body's circulation system and the olfactory system. When inhaled or applied to the surface of the skin, etheric oil will be absorbed into the body through capillaries, which will then be carried out by the circulatory system in both blood circulation or lymphatic circulation. Capillaries will then circulate substances to the central nervous system and the brain will deliver messages to target organs. The etheric oil applied with further massage will stimulate the circulatory system to work energetically. Besides aromatherapy can also cause olfactory nerve stimulation by the presence of certain scents and then connected directly to the hypothalamus. The hypothalamus is the part of the brain that controls the glandular system, regulates hormones, and influences body growth and activity.

Aromatherapy ginger contains zingiberena (zingirona), zingiberol, bisabilena, curcumen, zingiol, flandrena, vitamin A, which can block serotonin which is a neurotransmitter that is synthesized in neuro-neuro serotonergis in the central nervous system and enterochromafin cells that can provide comfort so that serotonin is a neurotransmitter synthesized in neuro-neuro serotonergis in the central nervous system and enterochromafin cells that can provide comfort so can overcome nausea, vomiting (Adhistry et al., 2019). The study conducted obtained data that in the intervention group given aromatherapy there was a significant difference and had a relevant correlation with the reduction in nausea and vomiting in patients with cervical Ca post chemotherapy.

Citrus aromatherapy as a comparison in this study also had a significant difference when compared with the control group in this study. This is because aromatherapy citrus contains benefits that are useful for improving health and well-being of the body, accelerating the healing of diseases and maintaining balance in the body's system as well as reducing the effects of nausea and vomiting felt by cancer patients (Adhistry et al., 2019; Setiawan, 2015). Other research on aromatherapy also states the same thing as this study that aromatherapy also gives the same meaning with  $p$  value = 0.096 (prasetyo, 2014).

Other data obtained in this study was the average difference between the ginger and citrus intervention groups which shows that a value of 3.18 points indicates that the ginger of respondents in this study provides a greater response when compared to citrus. Some things that became the advantage of Ginger aromatherapy in this study were the respondents said that ginger which has a sharper mint

aroma made a sense of calm felt by the respondents. Based on the results of this study the use of both Ginger and Citrus aromatherapy can be used as an alternative solution as a complementary treatment in tackling nausea and vomiting caused by the side effects of chemotherapy

### Limitation of The Study

This study is limited by the cervical cancer to the extraction of influence nausea and vomiting using the citrus and ginger aromatherapy.

### CONCLUSIONS AND RECOMMENDATION

Based on statistical data, ginger aromatherapy has its own advantages for overcoming nausea and vomiting after chemotherapy, but both ginger and citrus aromatherapy can be used as an alternative solution as a complementary treatment in dealing with nausea and vomiting caused by chemotherapy side effects.

### Conflict of Interest Statement

The author declare that there is no conflict of interest regarding the publication of this paper

### ACKNOWLEDGMENTS

The author thanks to Sriwijaya University and medicine faculty to supported this research

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