

Vandemicum of Nanogold and Nanosilver to Improve Quality Life of Cancer Patients

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ABSTRACT

The purpose of this study was to examine the success of the nanogold and nanosilver drug vandemicum in improving the quality of life of cancer patients. Vandemicum can be interpreted as a guide to treatment in the health sector. The quality of life of cancer patients is influenced by the individual's understanding of the disease they have so they know how to maintain health. This research method uses a quantitative approach with an experimental design that is one group pre-test and post-test design. Research subjects were 20 cancer patients who routinely checked their health at the Indonesian Cancer Museum. Research data were collected through a questionnaire and analyzed through non-parametric statistics with the Wilcoxon signed rank test formula. Based on the results of the non-parametric statistical analysis, the results show that the nanogold and nanosilver drug vandemicum can significantly improve the quality of life of cancer patients, with the significance of the α (error level) of 5% is 0.05. Because the result of asymp.sig (2-tailed) is $p = 0,000$, then the value of 0,000 is smaller than the error level of 0.05. So, the conclusion of this research is the drug vandemicum nanogold and nanosilver can improve the quality of life of cancer patients.

Keywords: Vandemicum, Nanogold, Nanosilver, Quality of Life, Cancer Patients

1. INTRODUCTION

World Health Organization in 2014 said that approximately 8.8 million people died because of cancer, while the top 5 global cancers were lung cancer, breast cancer, colon cancer, stomach cancer, and liver cancer. Cancer is a disease caused by abnormal cell growth in body tissues. Cancer can quickly spread throughout the human body to cause death [1] [2]. Anyone can get cancer regardless of age, gender or even environmental conditions. Factors that cause a person can get cancer include the following: chemicals, ionizing radiation, infections, metabolic imbalances, hormonal imbalances, immune dysfunction, and DNA damage. The lifestyle of modern people who often consume fast food without considering the intake of fruits and vegetables is the biggest cause of a person affected by cancer. While a high intake of fruits and vegetables will reduce the risk of cancer in a person [2]. Cancer is a multifactor disease formed over a long period of time and progresses through

different stages. Nutritional factors are one of the important aspects associated with cancer pathologies, besides obesity also increases cancer risk. In 2007 almost 70% of cancer sufferers in Indonesia were found to be in an advanced stage [3]. Cancer with the highest deadly category is ovarian cancer and uterix cervix, while the lowest deadly category is blood cancer. Cancer is the second leading cause of death which accounts for 13% of the world's population. Cancer can kill sufferers by all means, including due to malnutrition, where sufferers experience weakness throughout the body, chest muscles are weakened so that breathing is disrupted and death. Actually, cancer can be treated completely depending on the stage. The earlier the cancer is treated, the greater the chances of cure. Things that can affect the healing of cancer patients in treatment are physical and psychological conditions [4].

Cancer with various types can be cured with surgery, radiation, chemotherapy, immunotherapy or a combination of several types of treatment. Breast cancer

is one type of cancer that affects many women even though it can also be experienced by men. This cancer is the highest cancer rates after cervical cancer in Indonesia and the number tends to increase every year. This can happen because in general a woman does not know that she has breast cancer and her symptoms cannot be identified early [5]. Risk factors for someone affected by breast cancer based on male and female sex ratio is 1: 100. Risk factors for breast cancer are family history of breast cancer sufferers as much as 15.79%, early menarche as much as 8.77%, nullipara as much as 7.02% and long-term use of pills containing estrogen as much as 42.11%. In addition, there are also other risk factors that are thought to affect breast cancer patients, including late menopause, a history of breastfeeding, and obesity [6].

Breast cancer makes sufferers experience a decrease in quality of life that is from the aspect of physical and psychological conditions. While the quality of life of cancer patients is a determinant of healing in undergoing treatment [7]. This is consistent with the results of research on the quality of life of breast cancer patients who rate themselves negatively and tend to be dissatisfied with their physical appearance. Factors that cause patients to have a negative impression due to shame with an imperfect physical condition and low self-esteem. The complete loss of breast in both the left and right sides due to mastectomy methods will cause physical and psychological impacts such as depression, stress, anxiety, and changing the body image of women [5]. Mastectomy is the removal of breasts affected by cancer in stages II and III. Traumatic and frightening experiences that can have psychological effects are often experienced by cancer patients after mastectomy [8].

Someone who has cancer will experience physical and psychological changes because in him there is a malignant tissue cell disease, but also must take long-term treatment and have a high pain effect, can bring sufferers in a weak condition or even depression. The pain caused by suffering encourages sufferers to determine attitudes that describe the quality of life. Individual perceptions about themselves in aspects of life to achieve life satisfaction [9]. The limitations experienced must be motivated and addressed by sufferers such as: not complaining, not feeling sorry for themselves, not going down, and the effectiveness of performance in his life. In a study showed that cancer provides significant physical and psychological changes to individuals, such as: sadness, anxiety and fear of the future and death [3].

The quality of life of cancer sufferers is influenced by an individual's understanding of his illness so he knows how to maintain health. Economic factors are also of particular concern to the costs of treating cancer patients. The dominant aspect of establishing the quality of life of cancer sufferers is the psychological aspect, which includes spirituality, social support and well-being. In

fact, psychological aspects determine the quality of life, sufferers gain strength and feel healthier without drugs, this is due to suggestions in individuals to stay healthy [10]. Spiritual intelligence can also guide sufferers to have self-acceptance of their illness. Patients experience spiritual improvement compared to before suffering from cancer, because sufferers feel closer to God and do not blame God, but consider it as a gift of God [11]. The sense of love and comfort from social support gives motivation for recovery and strength in life. Finally, providing welfare determines the quality of life of sufferers. One way is to provide attention and assistance, especially for cancer patients who are less able, and for families, to provide support so that they can become good partners to achieve healing and recovery physically and psychologically of cancer patients [12].

Cancer control in Indonesia has been carried out by various parties, both government and non-government, but it has not been implemented in an integrated, comprehensive, and sustainable manner. Based on the Decree of the Minister of Health of the Republic of Indonesia Number 1575 / Menkes / Per / XI / 2005 Concerning the Organization and Work Procedure of the Ministry of Health, the Directorate of Non-Communicable Disease Control (PPTM) was formed which included the Cancer Sub-Directorate in charge of coordinating cancer control efforts in Indonesia [13]. Efforts to control cancer are aimed at reducing the number of sufferers and deaths from cancer, extending life expectancy and improving the quality of life of sufferers. The high quality of life of cancer patients can determine their health. This is because cancer patients have a purpose in life and strong guidelines for recovery.

Based on this, the researchers formed the basis for testing the nanogold and nanosilver drug vandemic in improving the quality of life of cancer patients. Vandemicum is a treatment guideline in the field of health, especially the use of drugs. Vandemicum nanogold and nanosilver drugs are guidelines for the use of drugs for cancer patients. Vandemicum nanogold and nanosilver drug contains pharmaceutical forms and formulations, therapeutic indications, pharmacocytology and pharmacodynamics, dosage of use, contraindications, general precautions, restrictions or restrictions, drug side effects and other interactions, packaging, storage recommendations, warnings, and names and names laboratory address. Through confidence in complying with guidelines according to the vandemicum of nanogold and nanosilver drugs, it is expected that the higher the quality of life of cancer patients.

Associated with the drug nanogold vandemicum and nanosilver researchers conducted scientific research on nanomaterial activity for cancer patients. Cancer patients who were the subjects of the study were cancer patients who actively checked their health at the Indonesian

Cancer Museum. According to (Buzea, Pacheco and Robbie, K.2007) in the treatment of cancer nanomaterials are divided into two namely nanogold and nanosilver. Nanogold as an anticancer has activity as a free radical reducer, minimizing tissue damage due to cancer, as well as antioxidants that focus on cancer cell therapy. Antimicrobial activity of nanosilver is the latest breakthrough in the medical world. Application of nanogold and nanosilver drugs for the treatment of cancer is expected to be able to weaken cancer cells or even cure cancer patients [14].

Nanotechnology is one of the biggest scientific and technological revolutions in the 21st century. Nanotechnology has provided many benefits in various fields of human life. One of them is in the health sector. In this field many nanoparticles have been used such as nanogolds that are used as a cure for cancer, antitoxin, antiarthritis and nanosilver used as coatings on medical equipment as well as catalysts. In addition to having a positive impact nanoparticles can also have a negative impact on human health. This is because nanoparticles have properties that cannot be easily predicted compared to bulk material with the same type. Some human organs such as the lungs, skin and digestive tract can experience direct contact with particles from outside, especially nano-sized particles that cannot be seen using ordinary eyes. In general, these three organs have natural defense mechanisms to eliminate various foreign objects that enter into it. But because nanoparticles have unique properties compared to ordinary particles, it is possible that nanoparticles can affect metabolism in the human body resulting in the emergence of new diseases.

Data that nanogold has been clinically proven to increase fibroblast cell proliferation in the skin of mice that were previously exposed to mercury and continued with recovery using nanogold has been obtained [15]. Nanogold enhances the process of collagen biosynthesis which is the main protein in the process of recovering skin damage in pre-clinical trials is a literature strengthening clinical trials on facial skin. Nanogold has also been tested in vitro to reduce free radicals that trigger skin damage and premature aging in humans, thus it is ideal if the presence of nanogold as a potential antioxidant in cosmetic formulas [16]. This supports another function, namely to restore tissue damage due to cancer. Nanogold has also been proven to restore skin damage due to being splashed with harsh phenol chemicals [17]. The injuries caused are rough wavy tissue and uneven color. Thus Nanogold has been proven to be effective in enhancing the aesthetics of skin that has suffered various kinds of damage and recovered from the inside by the mechanism of collagen formation and new cell growth. This is also very necessary in the recovery and growth of new cells in the case of cancer.

Nanogold has been used as a biopharmaceutical material because of the activity of the nanogold both as a

drug carrier, drug biomolecular carrier to genes and activity in the formation of chemical bonds C-C, C-N at the molecular level [18]. Nanogold in the medical world has been used in photothermal therapy and pathodynamic therapy which aims to increase cell-level immunity or immune system so that the body as a whole has increased resistance to various germ attacks, diseases and free radicals [19]. According to Dykman explained that this kind of increase in endurance is also very necessary for cancer patients, hence this is a strong basis for applying nanogold for cancer [20]. Experiments on macrophag nanogold cells not only have high biocompatible properties, but nanogolds also show properties as strong antioxidants at high doses and long treatment times that can reduce active oxygen (ROS) and Nitrogen (NRS) species in cells. Thus the cell will be protected from oxidative damage and has a very strong defense ability from various attacks from outside the cell [21]. The activity of nanogolds in cells has been studied and is known to activate organelles in cells including mitochondria, which produce cell-level energy and activate glutathione, the endogenous antioxidants that each cell has as controlling cell immunity. For this study the nanogold tested was labeled so that it could be monitored by an analysis instrument [22]. The high antioxidant activity of nanogolds is also a potential material for reliable anticancer drugs in the future.

Nanogold and nanosilver in the combined form have been tested *in vivo* as bioprotectors that work with different mechanisms where nanogold is in tissue development while nanosilver as antimicrobial [23]. This is very important for the design of external drug formulas, especially related to tissue repair due to various leprosy and cancer. Literature support is sufficient to apply nanogolds in more specific drug products, namely cancer drugs with nanogold essential materials. What's more mentioned nanogold activity up to the level of cells that play a role in increasing cell immunity that protects cells from oxidative damage or attack from outside both disease and free radicals. Tissue defects will gradually recover with improvement from this cellular level. This has also been proven in previous clinical trials where damage due to severe acne and also doused with chemicals that produce scarring in the skin tissue and damage to skin pigmentation also recover with nanogold. Literature that reinforces the application of nanogolds for cancer therapy in Indonesia comes from a very adequate literature. Stating that nanogold synthesized with chitosan matrix has been used in the therapy of liver cancer and lung cancer. Nanogold is the newest and most non-toxic cancer-carrying agent found in cancer [24]. Nanogold inhibits the growth of liver tumor cells delivered by Chen 2007 in accordance with what was delivered by Li SY 2012 and Huang in 2012 that gold nanoparticles have great potential as drugs including tumors and cancer [25] [26] [27].

Gold nanoparticles have an active surface that connects drugs and biotin receptors in cancer therapy [28]. Nanogold has optically active properties that are very suitable for application in cancer through photothermal therapy [27]. Nanogold is a very appropriate drug delivery agent that will maximize the work of cancer drugs [29]. Nanogold has been applied to cancer through nanotechnology [30] [31]. Nanogold has also been successfully synthesized with plant extracts [32]. Nanosilver has also been tested for its activity as an antimicrobial and has proven to be very strong [23]. Institutions dealing with cancer have also applied nanogolds for cancer therapy (National Cancer Institute 2007) and have also been widely conveyed via BBC radio broadcasts [33].

2. METHOD

This research method uses a quantitative approach with an experimental design that is one group pre-test and post-test design. Research data were collected through a questionnaire and analyzed through non-parametric statistics with the Wilcoxon signed rank test formula [34]. The questionnaire was given to get the pre-test and post-test data of cancer patients. Pre-test data are used to measure the quality of life of cancer patients before getting treatment in the form of a nanogold and nanosilver drug vandemic. While the post-test data are used to measure the quality of life of cancer patients after getting treatment in the form of a nanogold and nanosilver drug vandemic. So the use of experimental design with one group pre-test and post-test design in this study to test the nanogold and nanosilver drug vandemic in improving the quality of life of cancer patients. Vandemicum nanogold and nanosilver drugs are made based on the input of doctors, patients and narrated researchers. Research subjects were 20 cancer patients who routinely checked their health at the Indonesian Cancer Museum. Researchers need 6 months to carry out research, namely from March to August 2019.

3. RESULTS AND DISCUSSION

This study aims to test the nanogold and nanosilver drug vandemicum in improving the quality of life of cancer patients. After collecting data, the following research results are obtained:

3.1. Pre-test measurement results data

The data presented is pre-test measurement data. Pre-test data were divided into three categories: high, medium and low. The following table. 1 and Diagram.1 of the results of the pre-tests that have been carried out:

Table 1. Data of pre-test results

No.	Subject	Pre-Test Score	Category
1.	X-1	126	Low
2.	X-2	136	Low
3.	X-3	129	Low
4.	X-4	127	Low
5.	X-5	135	Low
6.	X-6	136	Low
7.	X-7	121	Low
8.	X-8	135	Low
9.	X-9	133	Low
10.	X-10	132	Low
11.	X-11	130	Low
12.	X-12	133	Low
13.	X-13	128	Low
14.	X-14	137	Low
15.	X-15	120	Low
16.	X-16	133	Low
17.	X-17	138	Low
18.	X-18	138	Low
19.	X-19	134	Low
20.	X-20	131	Low

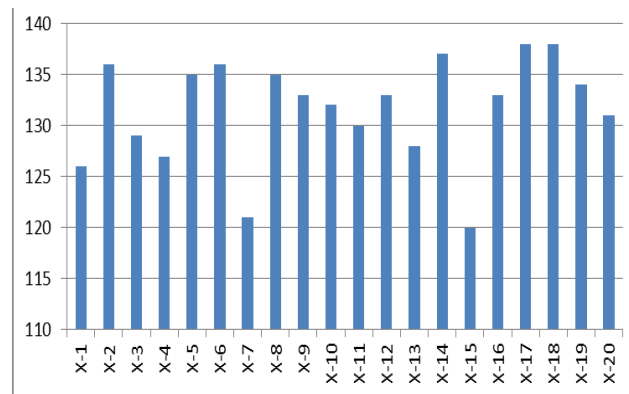


Figure 1 Pre-Test Result Quality of Life Cancer Patients

3. 2. The Data of Post-Test Measurement Results

The data presented are post-test measurement data. Post-test data are divided into three categories: high, medium, and low. The following table. 2 and diagram.2 from the results of the post-test that have been carried out:

Table 2. The Post Test Result of Quality of Life Cancer Patients

No.	Subject	Post-Test Score	Category
1.	X-1	145	Medium
2.	X-2	174	High
3.	X-3	140	Medium
4.	X-4	142	Medium
5.	X-5	152	Medium
6.	X-6	168	High
7.	X-7	129	Low
8.	X-8	152	Medium
9.	X-9	160	Medium
10.	X-10	147	Medium
11.	X-11	175	High
12.	X-12	148	Medium
13.	X-13	144	Medium
14.	X-14	165	High
15.	X-15	129	Low
16.	X-16	147	Medium
17.	X-17	157	Medium
18.	X-18	168	High
19.	X-19	157	Medium
20.	X-20	151	Medium

3.3. Comparison of pre-test and post-test measurements

Comparison of pre-test and post-test results is used to determine whether there are changes in the subject before and after the treatment of nanogold and nanosilver drug vandemic. The data obtained were analyzed using non-parametric statistical test Wilcoxon signed rank test. The following table.3 and diagram.3 are presented along with the results of the Wilcoxon signed rank test:

Table 3. Comparison Of Pre-Test And Post-Test

No.	Subject	Pre-Test Score	Post-Test Score	Enhancement	Category
1.	X-1	126	145	19	increased
2.	X-2	136	174	36	increased
3.	X-3	129	140	11	increased
4.	X-4	127	142	35	increased
5.	X-5	135	152	17	increased
6.	X-6	136	168	32	increased
7.	X-7	121	129	8	increased
8.	X-8	135	152	17	increased

No.	Subject	Pre-Test Score	Post-Test Score	Enhancement	Category
9.	X-9	133	160	27	increased
10.	X-10	132	147	15	increased
11.	X-11	130	175	45	increased
12.	X-12	133	148	35	increased
13.	X-13	128	144	16	increased
14.	X-14	137	165	28	increased
15.	X-15	120	129	9	increased
16.	X-16	133	147	14	increased
17.	X-17	138	157	19	increased
18.	X-18	138	168	30	increased
19.	X-19	134	157	23	increased
20.	X-20	131	151	20	increased

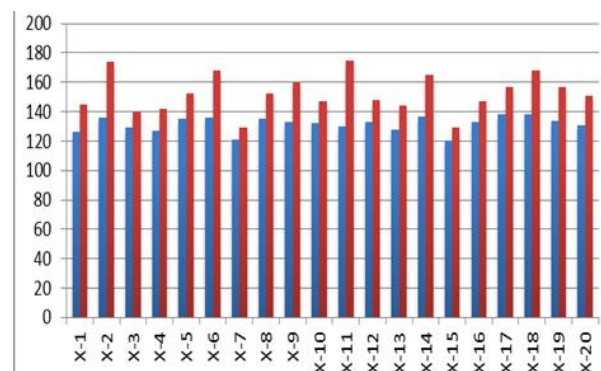


Figure 2. The Comparison of Pre Test Scor (Blue) and Post Test Scor Red of Quality of Life Cancer Patients

Based on the Statistical Test output, known asymp values. Sig (2-tailed) is worth 0,000. because the value of 0,000 < 0.05, it can be concluded that "Hypothesis is accepted". This means that there are differences between the results of the pre-test and post-test scores. So it can be concluded that the nanogold and nanosilver vandemic can improve the quality of life of cancer patients.

Giving vandemicum nanogold and nanosilver in cancer patients is expected to reduce the strength of the cancer suffered. So that the impact on the quality of life of cancer patients who have increased. [35]. According to Lynn 2017 positive perceptions in cancer patients can improve quality of life by marked decrease in stress, depression and anxiety to be cured [36]. Positive perception in improving the quality of cancer patients is by believing that the nanogold and nanosilver drug vandemicum can optimize the quality of health possessed. The forms of vandemicum nanogold and nanosilver

drugs in general as guidelines for the use of drugs are as follows:

(1) *Drug efficacy*

Reducing free radicals, detoxification mechanisms, increasing proliferation activity, cell regeneration, collagen biosynthesis, pancreatic cells, enhancing antibodies, increasing antibacterial activation, potent bactericidal potential and catalytic properties, and anti-inflammatory effects.

(2) *Procedure for use*

In a healthy body condition is enough 2 times a day, with the use of one drink 2 tablespoons. Whereas on the condition of the body with serious illness 3 times a day, once use 3 tablespoons. Both consumed in the morning, afternoon and evening with a time of 2 minutes before eating.

(3) *Contraindications*

In patients who are prohibited from losing weight should reduce the dose of use. The dose reduction is only for use to drink, not for typical use on the surface of the skin. If something unexpected happens, contact your doctor immediately or before using a consultation with a medical officer.

(4) *Excellence*

Can be consumed for all ages. Not restricted for pregnant or breastfeeding people because it can consume through proral, topical, or intravena.

(5) *Limitations or weaknesses*

Nanogold and nanosilver packaging which is packed in plastic bottles with 600 ml contents can only last 3 weeks. Nanogold and nanosilver will make people who consume it often defecate and urinate. In the colloidal synthesis process, nanogold and color nanosilver produced are unstable.

Cancer patients' beliefs are based on the nanogold and nanosilver drug vandemicum when taking it to be a determinant of the quality of life they have. The higher the confidence of cancer patients with nanogold and nanosilver drug vandemicum, the quality of life they have will also be higher. But when the confidence of cancer patients is low with nanogold and nanosilver drug vandemicum when taking it, then the quality that is owned will also be low. This is in accordance with the opinion of Prestiana & Purbandini 2012 that the high quality of life of individuals can reduce the fear of failure, increase aspirations and problem solving, and the ability to think positively [37]. Someone with a low quality of life will tend to give up easily in difficult situations, have

excessive anxiety and are often overshadowed by negative thoughts in the form of failure [38].

Based on the results of research from Setianingrum 2018 the quality of life of cancer patients in general tends to decrease [39]. This is closely related to how much the confidence of cancer patients to recover and self-acceptance. In line with Nimas 2017's opinion the quality of life of cancer patients can improve if they have positive perception and emotions [40]. BBC 2007 conveys perception and positive emotions that make cancer patients more confident with their ability to recover [41] also supported by gender associations in the United Arab Emirates [42] [43]. Combined chitosan nanogold has also been used as a treatment agent for liver cancer [44]. Cancer treatment is also intended to improve the quality of life of cancer sufferers [45] as also stated by the 2017 world health agency [46] which has been reviewed previously in the global status of various diseases [47]. The confidence of cancer patients with nanogold and nanosilver drug vandemicum makes health quality possessed more optimally further discussed by the National Cancer Institute [48]. In detail related to the confidence of cancer patients discussed in the journal Cancer Nursing [49]. So that researchers prove that cancer patients who adhere to vandemicum guidelines when taking nanogold and nanosilver drugs, the quality of health they have is more optimal. When discipline complies with high nanogold and nanosilver drug vandemic, the quality of life of cancer patients will improve.

4. CONCLUSION

The conclusion from this research: The higher the discipline of complying with the nanogold and nanosilver drug vandemicum, get the better quality of life for cancer patients. This means that there is a relationship between nanogold and nanosilver drug vandemic with the quality of life of cancer patients. This is proven by the quality of life of cancer patients showing a more positive direction.

It is hoped that the results of this study can be considered so that material about the nanogold and nanosilver drug vandemicum can be included in special learning in the field of chemistry. So that students can implement nanogold and nanosilver drug vandemicum in daily life. The Indonesian Cancer Research Institute is expected to improve services through counseling, information and education services about cancer and the knowledge of nanogold and nanosilver drug vandemic.

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