Effect of Sodium Carbonate, *Eruca sativa* Oil, Lavender Oil and *Aloe vera* Oil On Hematological Parameters and Spleen in Experimental Induced Breast Cancer of Female Rats Treated with Doxorubicin

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Abstract: Background: Natural products obtained from *Eruca sativa*, *Aloe vera* and lavender are considered high efficient antioxidants, and they are useful in many diseases specially breast cancer and in patients under chemotherapy. Sodium carbonate is considered alkaline medium alter the acidic medium which consider suitable medium for proliferation of breast cancer. **Aim of the work:** is to determine effects of the fore mentioned materials on doxorubicin treated and breast cancer induced female rats**. Materials and methods:** Six groups of animals, five rats in each were used for this experiment and divided into negative control, positive control, sodium carbonate group, *Eruca sativa* oil group, lavender oil group and *Aloe vera* oil group. We induced cancer in all rats by MCF7 breast cancer cell line except negative control. Then all groups (Except positive and negative controls) were intraperitoneally (i.p.) injected with 2 mg /rat of adryadox (adryamycin chemotherapy) then rats were sacrificed and blood were analyzed. Spleens were fixed in 10% formalin then used to make sections and examined under light microscope. **Results**: show significant increase in RBCs and Hb as general in antioxidants groups and improve of spleen. **Conclusion:** it is concluded that *Aloe vera*, *lavender* and *Eruca sativa* is high efficient antioxidants improve total RBCs and Hb and decreases lymphocytes and improve spleen. **Recommendation:** we recommend with using this antioxidants in breast cancer patients that under chemotherapy.

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Key words: sodium carbonate- *Eruca sativa – lavender – Aloe vera* - blood – spleen

1. Introduction

Sodium bicarbonate is a bland mouth rinse, it is harmless and beneficial for oral hygiene maintenance, Aromatherapy used in ancient Egypt, China and India as complementary medicine (**Krishna *et al.,* 2000**). Aroma therapy has many directions it acts on nervous system, anxiety, relaxing, relieving depression, reducing stress, stimulating or sedating and restoring both physical and emotional well-being *(***Buckle 1997 and Edge, 2003***)*. Fruit and vegetable consumption are known to give protection against many cancers in more than 150 previous dietary intervention studies with prevalage of antioxidant mechanisms (**Block *et al.,* 1992**). Antioxidants alleviate the oxidative stress caused by oxygen species (ROS) such as the superoxide anion, peroxy radical, hydrogen peroxide so it play important roles in human health (**Halliwell 1996; Gutteridge and Halliwell 2000**).

Rocket is high in erucic acid, cis-13—docosenoic acid. Essential oil from the leaves of *E. sativa* contains 67 volatile components representing 96.52% of the oil. The oil contains high content of sulphur and nitrogen containing compounds (**Miyazawa *et al.,* 2002**). In addition to the major and functional component, ally isothiocyanate was shown to be one of the mahpr components of *E. sativa*.

Flanders and Abdulkarim, 1985 reported that *E. sativa* was used as an appetizer, sexual power enhancer blood cleaner and urine discharger. *E. sativa* includes polyunsaturated fatty acids and monounsaturated fatty acids the poly unsaturated fatty acids like palmitic, oleic, linoleic and linolenic the monounsaturated fatty acids like oleic acid, cs-11-eicosenoic acid methylester linoleic acid methyl ester.

Aloe vera contains 75 potentially active constituents: Vitamins minerals, enzymes, sugars, lignin, saponins salicylic acids and amino acids. Several studies was done on *Aloe vera* showing its Antiulcer activity, Anti diabetic, Antihypercholestermic antioxidative effect, antibacterial activity, antiviral activity, antiacne, antifungal activity nutraceutical, cardiac stimulant, moisturizer. Immunomodulator, protection of skin from Uv- A and Uv-B rays and wound healing property. *Aloe vera* is used in various conditions like mild to moderate burns Erythema, Genital herps, Seborrheic dermatitis skin moisturizer, psoriasis vulgaris, type 2 diabetes, angina pectoris, oral lichen planus infections, ulcerative colitis, U-v induced erythema kidney stones and Alveolar osteitis (**Bhuvana *et al.,* 2014**).

Vitamins present in *Aloe vera* are vitamin A, C, E which are antioxidants. It also contains vitamin B12,

folic acid, and choline antioxidant neutralizes free radicals also it contains eight enzymes: aliiase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulose, lipase and peroxidase, in addition it includes minerals like calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc (**Bhuvana *et al.*, 2014**). It also includes sugars and anthraquinones, fatty acids. hormones and others.

Lavender genus is a member of the lamiaceae family. *Lavandula* species are widely distributed in the Mediterranean countries. The *lavandula angustifolia Mill*, it is a powerful aromatic and medicinal herb. The plant is used in traditional medicines of different parts of the world for treatment of several diseases including gastrointestinal nervous and rheumatic disorders (**Hajhashemi *et al.*, 2003**), the components of *Lavandula angustifolia* are linalool and linalyl acetate which have anti-inflammatory properties in rats (**Peana *et al.*, 2002**), linalool decrease the production and the release of nitric oxide (NO) without interference in prostaglandins pathway.

2. Materials and Methods:

Chemicals:

Doxorubicin hydrochloride (Adriadox 50 mg in 25 ml strile water production of Royal Medical PVT.LTD Khandelwal laboratories PVT.LTD. Calculations of Doxorubicin (DOXO) dose for rats was performed according to **(Hidalgo *et al*., 2011)**: briefly, To convert a dose from mg/m2 to mg/kg in human = 75mg/m2 (DOXO) in human =75÷37=2.02mg/kg in human. To convert this dose from human to rats: 2.02 mg/kg in human=2.02×6.2=12.56mg/kg in rats. *Eruca sativa* oil, Lavender oil and Aloe vera oil was produced by Everline Natural oils and cosmetics Co.,6th October City. Cairo- Egypt saved in dark bottles and used fresh.

Induction of mammary tumors in rats:

All treated groups (4) and positive control are induced with breast cancer cell line MCF7 through injection of 1 ml of the cell line intraperitoneally (i.p.) and left for one month for the development of breast cancer inside rats body.

Thirty female albino rats (Sprague Dawley) weighing about 160 gm ± 10 gm (purchased from the National Research Center, Dokki, Cairo- Egypt, are divided equally into six groups: group one served as non-treated negative control; group two was a cancer positive control which were induced with breast cancer MCF7 cell line (each rat was injected with 1 ml of this cell line 6*.

10^6cell**) El Shahat *et al.*, 2013**(; group three, rats of this group are administered with 1 ml of sodium carbonate solution 1.2% solution (the dose in human used by some scientists was 12 g/L); rats of group four are administered with 1 ml of *Eruca sativa* oil ؟; group five are administered with 1 ml lavender oil. Group six was administered with 1 ml *Aloe vera* oil notice that all used oils was watery extracted.

After that, rats of groups three, four, five and six are injected intraperitoneally with the chemotheraby doxorubicin hydrochloride 1ml (2mg/ml) solution (**El Shahat *et al.*, 2013**). Then at the second day of the administration of different treatments was orally through stomach tube and the administration duration was for one month then all rats are sacrificed.

At sacrifice, blood was collected in EDTA tubes for complete blood count analysis and the other parts of blood was collected and left to coagulate then blood was centrifuged at 3000 rpm (**Rodak, 1995**) for 10 min to obtain serum which prreserved at -4 ^oC in ependorphs for later biochemical analysis.

Breast cancer cell line MCF7 was obtained from tissue culture **VACSERA**. Every rat was injected with $6X10^6$ cell according to preliminary studies.

Hematological parameters: all hematological parameters are determined using hematology analyzer (Labomed, Inc SK9000).

For determination of blood indices we used the following equations

MCV= Heamatocrit/RBCs count *10

MCH=Haemoglobin/RBCs count*10

MCHC=Haemoglobin/Haematocrit*100

Histological sectioning

Spleen was collected from female rats and fixed in 10**% formalin** then put in wax blocks according to the method of Al Husseini and Demean 2004, and stained with Prussian blue stain and Mallory trichrome stain then examined under 40 x objectives of light microscope.

3. Results

Table 1 shows the effect of sodium carbonate, *Eruca sativa* oil, lavender oil and *Aloe vera* oil on breast cancer induced female rats after treatment with doxorubicin. In total red blood corpuscles counts, a significant increase in lavender oil group was shown as compared to positive control and significant decrease in *Aloe vera* oil group and sodium carbonate and *Eruca sativa* oil group comparing to positive control where comparing the treatments together shows significant increase in lavender oil group and *Aloe vera* oil group comparing to sodium carbonate. Where the most increase in total RBCs counts was in lavender oil group comparing to sodium carbonate group and comparing to positive control group.

In case of hemoglobin concentration, a significant increase in lavender oil group was found comparing to positive control while a significant decrease in *Aloe vera* oil group, sodium carbonate

group and *Eruca sativa* oil group comparing to positive control. Where comparing the treatments together shows significant increase in *Eruca sativa* oil group, lavender oil group and *Aloe vera* oil group comparing to sodium carbonate group. The most increase in hemoglobin concentration was lavender oil group comparing to sodium carbonate group and comparing to positive control group.

Where, in case of hematocrit value, data shows significant decrease in *lavender* oil group, *Aloe vera* oil group, *Eruca sativa* and sodium carbonate groups comparing to positive control. Where, comparing treatments together lavender oil group shows significant increase comparing with positive control in addition to comparing the other treatments with sodium carbonate, *lavender* oil, *aloe vera* oil and *Eruca sativa* oil groups show significant increase.

On the other hand, total WBCs count, and platelets count show non-significant changes.

Table (1): Effect of sodium carbonate, *Eruca sativa* oil, *Lavender* oil and *Aloe vera* oil on some hematological parameters in breast cancer induced female rats treated with doxorubicin

groups / parameters	Negative control (a)	Positive control (b)	Sodium carbonate (c)	*Eruca sativa* (d)	*Lavender* (e)	*Aloe vera* (f)	probability	ANOVA significance
Total RBCs count $X10^6$(Mean± SE)	8.64d 1.07	8.08 c,a,d 0.66	6.79 a,d 0.22	7.31 0.3	8.23 bcad 0.00	7.3 e,b,c,a,d 0.3	0.01	**
Hemoglobin g/dl (Mean± SE)	15.5d 1.60	14.5c,a,d 1.27	12.22a,d 0.58	13.3 0.90	14.3b,c,a,d 0.28	12.5e,b,c,a,d 0.70	0.01	**
Hematocrit%(Mean± SE)	48.275d 5.57	46.35c,a,d 4.37	38.32d 1.48	40.44 2.38	42.85b,c,a,d2.04	40.2b,c,a,d 1.97	0.01	**
Total WBCs count $X10^3$(Mean± SE)	18.25 8.72	18.8 2.20	15.58 4.24	13.3 3.97	16.85 4.31	23 5.09	0.05	N.S
Platelets $X10^3$ (Mean± SE)	1129 168.24	834.25 144.11	907.2 345.03	888.8 164.42	664 11031	877.5 108.18	0.05	N.S

Table 2 shows significant changes between different groups in MCHC value and by using L.S.D. data shows a significant increase in MCHC value in lavender oil group *Eruca sativa* and sodium carbonate groups and significant decrease in *Aloe vera* group comparing to positive control. The most increases were in lavender oil group. In addition, by comparing data with sodium carbonate group lavender and *Eruca sativa* oil groups shows significant increase while *Aloe vera* shows significant decrease.

On the other hand, data in table 2 shows non-significant changes in MCV, MCH and RDW-cv values.

Table (2): Effect of sodium carbonate, *Eruca sativa* oil, *Lavender* oil and *Aloe vera* oil on blood indices in breast cancer induced female rats treated with doxorubicin

groups / parameters	Negative control (a)	Positive control (b)	Sodium carbonate (c)	Eruca sativa (d)	Lavender (e)	Aloe vera (f)	probability	ANOVA significance
MCV FL (Mean± SE)	55.92 2.79	57.32 1.86	56.4 0.68	55.28 1.57	52.05 2.19	55.05 0.34	0.05	N.S
MCH Pg (Mean± SE)	17.97 0.81	17.92 0.42	17.96 0.38	18.18 0.63	17.4 0.28	17.1 0.28	0.05	N.S
MCHC% (Mean± SE)	32.15 cd 0.47	31.3 a,c,d 0.33	31.9 d 0.56	32.86 0.51	33.4b,a,c,d 0.98	31.1e,b,a,c,d 0.28	0.001	***
RDW-cv% (Mean± SE)	18.72 1.87	16.3 1.95	16.34 1.95	15.72 2.27	18.45 0.2	18.25 4.73	0.05	N.S

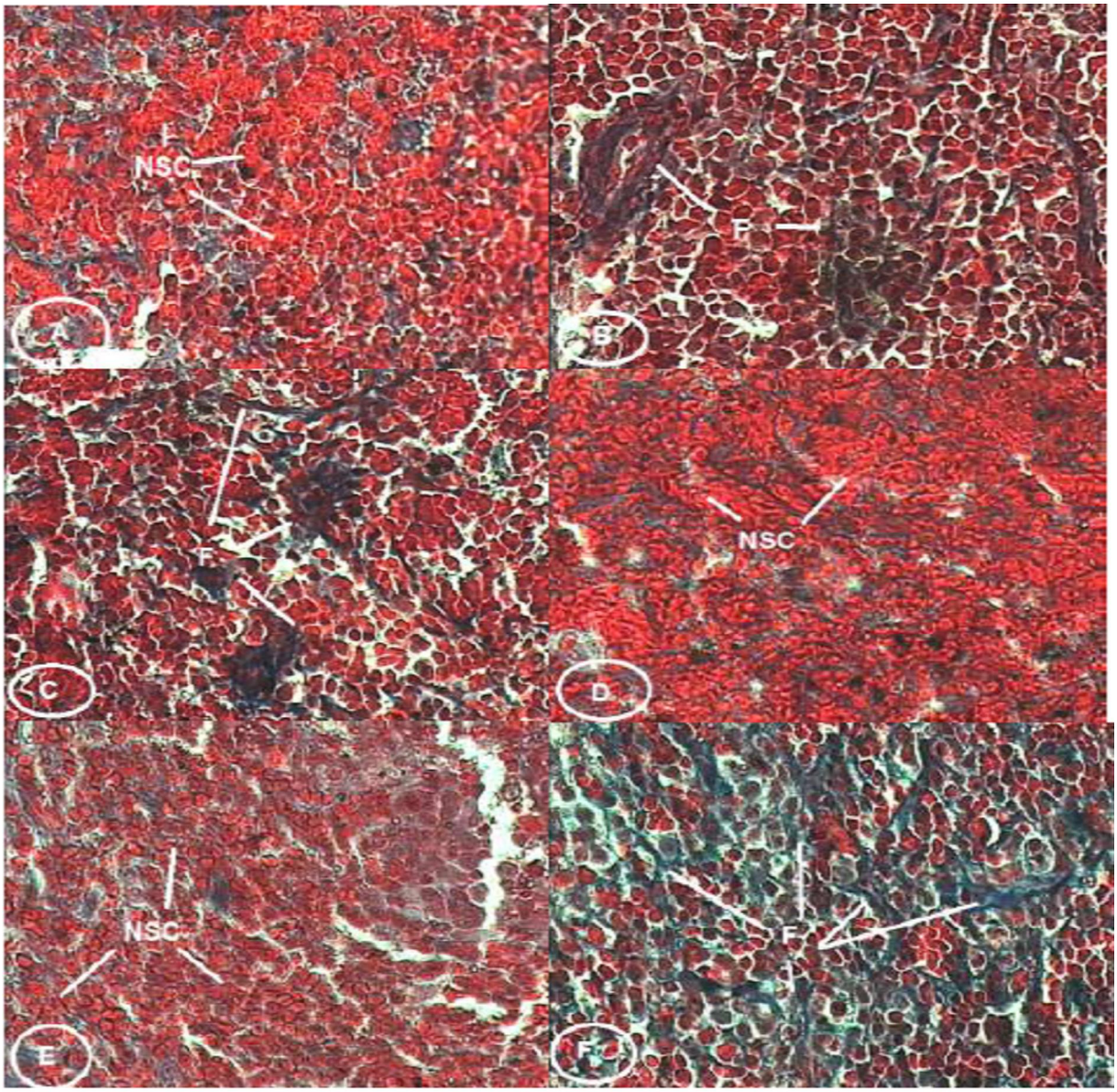
Table 3 lymphocytes shows high significant difference between different groups, but L.S.D. statistics shows more details, while a significant decrease in both *lavender* oil and *Aloe vera* comparing to positive control. The most decrease in lymphocytes was in sodium carbonate group comparing to positive control and comparing to lavender oil and *Aloe vera* groups also *Eruca sativa* oil group show significant decrease comparing to positive control.

Table (3): Effect of sodium carbonate, *Eruca sativa* oil, *Lavender* oil and *Aloe vera* oil on differential leucocyte count in breast cancer induced female rats treated with doxorubicin

groups / parameters	Negative control (a)	Positive control (b)	Sodium carbonate(c)	*Eruca sativa* (d)	*Lavender* (e)	*Aloe vera* (f)	probability	ANOVA significance
Neutrophils%(Mean± SE)	14.25 6.02	14.75 6.55	19.16 7.53	16.02 4.65	15.3 3.81	8.3 10.88	0.05	N.S
Monocytes%(Mean± SE)	4 3.55	7.25 5.12	13.94 10.67	6.98 4.71	6.55 6.29	15.95 9.82	0.05	N.S
Lymphocytes%(Mean± SE)	80.5d 2.88	77 a,c,d 4.96	65.22d 6.39	75.38 5.64	76.15b,a,c,d 8.69	74.6b,a,c,d 0.84	0.01	**
Eosinophils%(Mean± SE)	1.25 0.5	1 0	1.62 0.51	1.58 0.85	1.85 1.2	1.05 0.07	0.05	N.S
Basophils%(Mean± SE)	0 0	0 0	0.06 0.13	0.04 0.08	0.15 0.21	0.1 0.14	0.05	N.S

a, b, c, d, e, f= symbols of groups, when present it mean that group has significant difference with the mentioned groups through L.S.D. statistics

Photomicrographs of histological sections of spleen; Plate (1) Mallory Trichrome stained spleen sections, 400 X Magnification power



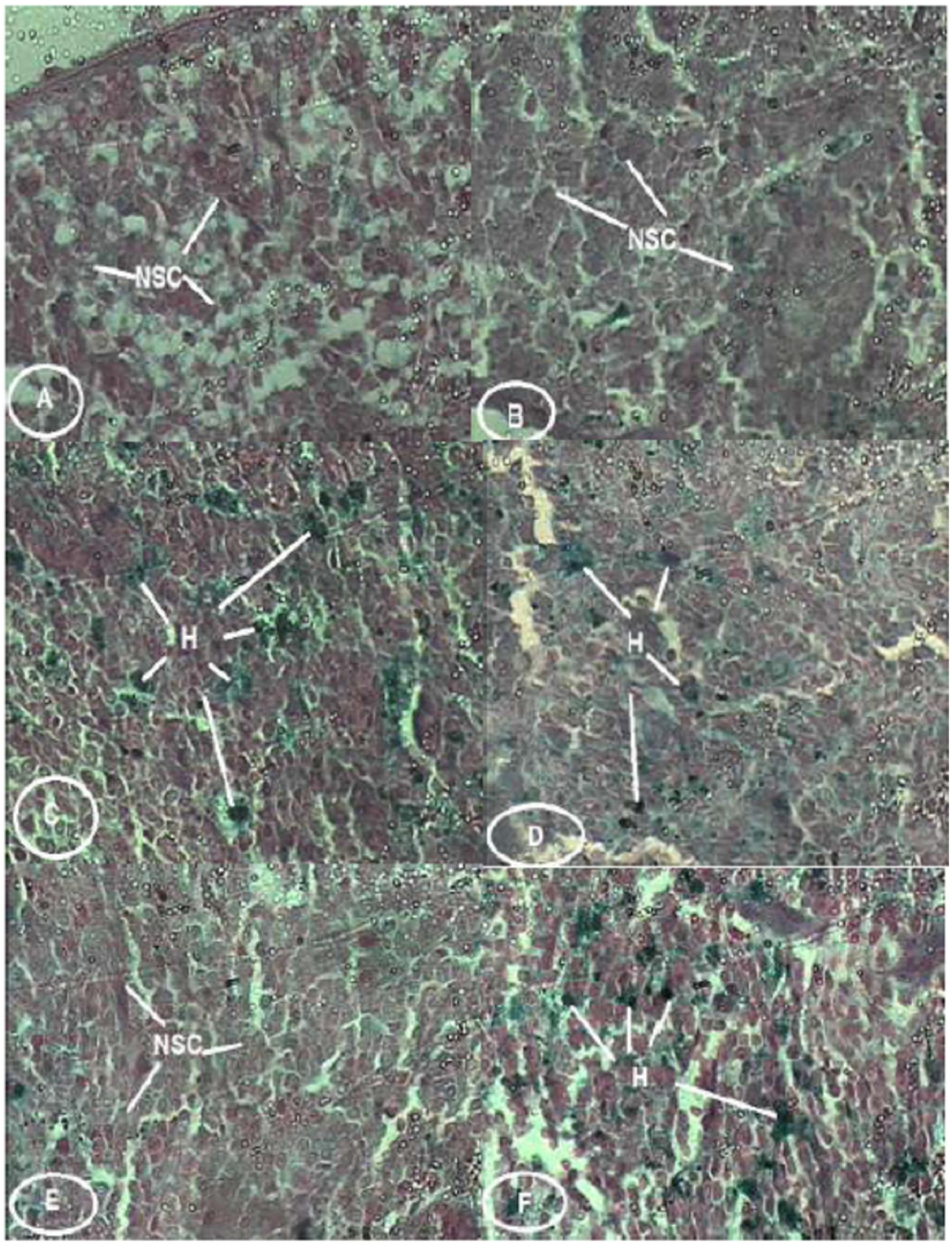
Legend of Plate (1)

A- Negative control group shows normal splenic cells (NSC)
B- Positive control group shows fibrosis (F) fibers stained dark blue
C- Sodium carbonate group shows fibrosis (F) fibers stained dark blue
D- Eruca sativa oil group shows normal splenic cells (NSC)
E- Lavender oil group shows normal splenic cells (NSC)
F- Aloe vera group shows fibrosis (F) fibers stained dark blue

Histopathological changes after Mallory trichrome staining show the following:

Negative control shows normal splenic cells where positive control shows fibrotic changes in the red pulp also sodium carbonate group shows fibrotic changes in the red pulp also sodium carbonate group shows fibrotic changes in addition to *Aloe vera* group shows the same fibrotic changes. On the contrary, *Eruca sativa* oil and lavender oil groups show normal splenic cells.

Photomicrographs of histological section of spleen; Plate (2): Prussian blue stained spleen sections, 400X Magnification power



Ligand of Plate (2)

A- Negative control group shows normal splenic cells (NSC)
B- Positive control group shows normal splenic cells (NSC)
C- Sodium carbonate group shows accumulation of Hemosidrine (H) particles, stained dark blue
D- Eruca sativa oil group shows accumulation of Hemosidrine (H) particles, stained dark blue
E- Lavender oil group shows normal splenic cells (NSC)
F- Aloe vera group shows accumulation of Hemosidrine (H) particles, stained dark blue.

Histopathological changes after Prussian blue staining show:

Dense blue reaction reflecting Haemosiderin iron accumulation in sodium carbonate group, *Eruca sativa*

oil group and *Aloe vera* oil group comparing to positive control

4. Discussion

Rbcs count increases in lavender oil groups may be due to increase of erythropoietin hormone and due to antioxidants present in lavender oil. Where, the decrease of RBCs in *Aloe vera*, sodium carbonate and *Eruca sativa* oil groups probably due to decreasing of erythropoietin hormone and causing anemia with chemotherapy. Hemoglobin increases in lavender oil group may be due to increasing of iron level where hemoglobin decreases in *Aloe vera*, sodium carbonate and *Eruca sativa* oil groups probably due to decreasing iron level. The decreasing of hematocrit in all groups is probably due to iron deficiency or increase intravascular fluid. The increase of MCHC in lavender oil, *Eruca sativa* and sodium carbonate may be due to dehydration and the decreasing in *Aloe vera* oil group may be due to iron deficiency or over hydration. The decreasing in lymphocytes in lavender oil and *Aloe vera* oil groups may be due to decreasing inflammation.

Little is known about effect of sodium carbonate on cancer. Cancer is distributed all over the world (**Siegel *et al., 2014***). There is insufficient published information about the use of sodium mouth wash for preventing oral mucositis in patients and it is non-recommended in chemotherapy (**Kinny 1990**).

Choi and Kim, (2012) studied sodium bicarbonate solution versus chlorhexidine mouth wash in oral care of acute leukemia patients undergoing induction chemotherapy: A randomized controlled trial and concluded that oral care by sodium bicarbonate solution for acute leukemia patients undergoing chemotherapy was an effective intervention to improve oral health.

My study in some results are contrary with the following which prove including of the all used antioxidants on effectiveness in treating diseases and improving health.

Essential oils are a mixture of unsaturated and saturated hydrocarbons, aldehydes, alcohol, ethers, esters, ketones, oxides, phenols and terpenes, which may produce characteristic odors **(wildwood, 1996**). It has antibacterial, antiviral and anti-inflammatory nature along with immune booster body with hormonal glandular, circulatory emotional effect memory and alertness enhancer is well documented by scientists (**Svoboda *et al.,* 1998**). People who eat higher amount of fruits and vegetables have reduced amount of cancer risk incidence and have lower mortality rates (**Ziegler, 1991**).

Phytochemicals has antioxidant activity which protects human body from free radicals preventing oxidative stress and associated diseases (**Barros *et al., 2011***). Carotenoids are essential for human health (**Shahidi and Ho 2007**). Phenolic compounds can divided into flavonoids and non-flavonoids it has antioxidant activity and this is depending on their chemical structure. They are strong antioxidants with good metal chelating potential and can decrease lipid peroxidation and trap nitrate, so preventing the formation of mutagenic nitrose compounds (**Fernandez- Panchon *et al.,* 2008**) phenolics prevent Fatty acids from oxy dative decay and oxidative stress of oxidizing agents and free radicals, thus contributing to human health.

Rocket includes antioxidants like carotenoids vitamin C, Flavonoids Such as Appiin, Luteolin and glucosinolates the pre cursors of isothianates and sulfaraphene (**Hanafi *et al., 2010***) oils myristicin and apiole B-phellandrene. Glucosinolates have several biological activities including anticarcinogenic, antifungal, antibacterial and antioxidant action (**Kim *et al.,* 2004**).

Abdo and Zeinab, (2003) reported that glucosinolates capable to protecting cells against oxidative stress in addition; rocket contains Zn, Cu, Fe, Mg, Mn and other elements which increase immune response.

The positive and beneficial effects of the phytochemicals contained in rocket on human health are attributed to the vitamin A, vitamin, flavonoids and glucosinolates (**Bell and Wagstaff 2014**).

Rocket is considered an excellent source of antioxidants because it includes phenolic compounds, carotenoids, glucosinolates iso thiocyanates (**Villatoro-Pulido *et al.,* 2012**). In addition it possesses antisecretory, anti-inflammatory, cytoprotective and anti-ulcers activity (**Khan and Khan 2014**).

Fuentes *et al.,* (2014) studied role of *Eruca sativa Mill.* (Rocket) extract antiplatelet (NF-KB inhibition and antithrombotic activities and found that *Eruca sativa Mill.* tract antiplatelet activities are associated with NF-KB inhibition. Kaempferol is the major compound present in *Eruca sativa* followed by quercetin and isorhamnetin- 3, 4 diglucoside (**Pasini *et al.,* 2011**). Kaempferol, quercetin and isorhamnetin have antiplatelet activity.

Fuentes *et al.,* (2014) concluded that rocket extract shows antiplatelet activity (inhibition of platelet activation, aggregation and release of inflammatory mediators and the mechanism of action may be by NF- KB inhibition.

Eruca sativa oil has antioxidant and antimicrobial activity (**Khan and khan 2014**) and inhibits proliferative melanoma. The active ingredients in *Eruca sativa* are allyl isothiocyanate, phnlehyl isothiocynate and sulphoraphene and anioidants

keglutathione. The mechanism of anticarcinogenic activity is due to isothiocyanates (**Hecht, 1995**).

Is thiocyanates act through apoptosis and exhibit anticancer activity by multiple pathways including oxidative stress (**Trachootham *et al.,* 2006**), inhibition of cell progression (**Zhang *et al.,* 2006**), Angiogenesis (**Xiao and Singh 2007**). Tanins presents in *Eruca sativa* have antitumor effect, also saponin has the property of precipitating and coagulating red blood cells (**Gulfraz *et al.,* 2011**).

It was found that neutrophils count significantly decreases in rabbit blood treated with varying doses of *A.vera* so *A. vera* can used in cancer treatment and blood diseases with low white blood cells count and leukaemia. Also veterinarian used *A. vera* for treatment of cancer and feline leukemia in animal patients. By British cancer research UK identified the presence of a compound in *A. Vera* named di 2 ethyl phthalate (Dehp) which stop the development of leukaemia cells in test tubes and the mechanism involved in reducing neutrophil count should be further investigated (**Bhuvana *et al.,* 2014**).

Researchers investigated that *A. vera* has initiated phagocytic activity of reticuloendothelial system (**Im *et al.,* 2015**). It has been investigated that it can enhance cellular as well as humoral immunity by proliferation of myeloid and erythrocyte colony forming cells, macrophage colony forming cells and pluripotent hemopoietic cells (Boudreau and Beland, 2006).

Channa *et al.,* (2014) studied the effect of oral supplementation of *Aloe vera* extract on haematology indices and immune cells of blood in rabbit and found significant increase mean corpuscular hemoglobin (MCH), MCV and lymphocytes.

Brunelli *et al.,* (2010) studied the potency of two glucosinolates, glucomoringin and glucoraphanin against various biomarkers in human carcinoma cells and human multiple myeloma and leukemia and found that both glucosinolates induced cell death in the μ M range in all tested cell lines. Their breakdown products isothiocyanates were strong inhibitors on NF-KB activity and inducers of apoptosis through caspase-dependent pathway. The glucosinolates were also able to modulates the GST/GSH pathway in MCF-7 cells and had significant antitumoral activity in amyeloma model causing little toxicity (**Kim and Park, 2009**)

The reason of increasing of MCH in case of *Aloe vera* is for vitamins e.g. riboflavin thiamine and folic acid and essential and non-essential amino acids that required for synthesis of hemoglobin research has also been investigated that this increase in erythropoiesis is due to the presence of polysaccharides in A. vera leaf gel. Also, it is investigated that the increase in erythropoiesis is due to the presence of polysaccharides in *A. vera* leaf gel (**Ni *et al.,* 2004**).

Studies shows there are a significant influence of massage on the immune functions of human immune deficiency (HIV)- positive patients (**Diego *et al.,* 2001**). Based on these studies it is hypothesized that, aroma therapy massage may influence the cellular and humoral compartments of the immune function in both pathological and normal states.

Kuriyama *et al.,* (2005) reported that hematocrit and RBCS count were significantly decreased following control massage therapy, but not after aromatherapy massage. The number of lymphocytes significantly increased after the aromatherapy massage but not after control massage.

Use of essential oils is called aromatherapy the aromatic plants have volatile portion this volatile portion is extracted normally by distillation for therapeutic or medical purposes, about 60 or more kinds of herbal oils (**Price and Price 1999**) that are used as cure for pains and injuries (**Smith *et al.,* 2003**).

Kim and Cho 1999 investigated the effects of different constituents of essential oils such as α-pipine, α-terpinine, terpin-4-ol, α-teroineol, linalyl acetate and linalol and concluded that the compounds present in the lavender essential oil may have direct or indirect anti-inflammatory or ant nociceptive activities.

Results revealed that lavender essential oil treatment reduces the responses induced by carrageenan. However, the drug used as reference (**Bhattacharyya *et al.,* 2008**). The anti-inflammatory activity of lavender oil was evaluated by the inhibition of croton oil induced ear edema (**Pitot 1979**).

The anti-inflammatory action of lavender essential oil (LEO) in croton oil-induced ear edema model when compared to the dexamethasone as reference drug was greater than the effect observed in the pleurisy model. This finding suggests that the mechanism involved in the anti-inflammatory effect of lavender may be due to G protein-coupled receptor and /or interference in the system of intracellular second messenger phospholipase C/inositol phosphate **Silva *et al.,* (2015).**

Conclusion:

1- Lavender oil increase blood RBCs and Hb

2- *Aloe vera* and sodium carbonate and *Eruca sativa* decrease RBCs and Hb

3- All groups decreases hematocrit

4- Lavender, Eruca sativa oil and sodium carbonate increases MCHC

5- Lavender and *Aloe vera* and sodium carbonate decreases lymphocytes in breast cancer chemotherapy treated rats

6- *Eruca Sativa*, *Aloe vera*, lavender is high efficient antioxidants

7- *Eruca sativa* oil, *Aloe vera* oil and lavender oil improve liver and its function as part of reticuloendothelial system.

Recommendation

We recommend with using Lavender oil, *Eruca sativa* oil and *Aloe vera* oil in little doses to improve health of breast cancer patients that under chemotherapy.

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