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"RESEARCH ON BLACK PEPPER - PREVENTION AND CURE BREAST CANCER BY INVOLVING RESEARCHER AND PHARM D DOCTOR IDENTIFIED NEW APPROACHES"

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ABSTRACT

Breast cancer is a malignant cancer that start in the cells of breast and a lump is formed in the breast. Cancerous cells start to begins in the cells of lobules and in other tissues of breast but later on cells can travel to other parts of body through lymphatic system. Due to lump formation size of breast changes, it can be due to many reasons like obesity, lack of physical exercise, drinking alcohol and mainly hereditary. According to that pepper by giving to breast cancer patients for prevention After questioning 1,945 women with early-stage invasive breast cancer, recently researchers found that 45% reported at least one toxicity-related side effect they ranked as either 'severe' or 'very severe', Nearly half of women being treated for early-stage invasive breast cancer report suffering 'severe' or 'very severe' side effects from their drugs, Irregular lump in one or both breasts, Swelling of all or part of the breast, even if no lump is detected, Skin irritation or dimpling, Pain in the breast or nipple, Nipple retraction (nipple turning inward), Nipple discharge (other than breast milk), pain in armpits, redness of skin, sometimes nipples may discharge blood, size of breast increases. Breast Cancer prevention is the diet provides an example of a full day's healthy diet, inspired by Asian countries, Prevention is always better than cure. Therefore, the focus of the meals are on foods that reduce the risk of getting breast cancer or, if the person has already been diagnosed with it, foods that reduce its recurrence. Foods that have been shown to have this potential include cruciferous vegetables, black pepper and foods with soluble fiber, Piperine reduces the growth of breast cancer cells without affecting the growth of normal breast cells. Piperine has been shown to inhibit the growth and motility of triple negative breast cancer cells.

KEYWORDS

Malignant cancer, Breast cancer, Lymphatic system, Obesity, Redness, Nipple, Black pepper, Piperine and Tumorigenesis.

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INTRODUCTION

Breast cancer is a malignant cancer that start in the cells of breast and a lump is formed in the breast. Cancerous cells start to begins in the cells of lobules and in other tissues of breast but later on cells can travel to other parts of body through lymphatic system. Due to lump formation size of breast changes, it can be due to many reasons like

obesity, lack of physical exercise, drinking alcohol and mainly hereditary. Test to detect breast cancer by biopsy of that lump or by mammography. Breast cancer is cancer that forms in cells of the breast. The milk-producing ducts and glands are the two most likely areas to develop cancerous cells. In rarer cases, breast cancer begins in fatty tissues, also known as stromal tissues.

PREVALENCE

According to that pepper by giving to breast cancer patients for prevention After questioning 1,945 women with early-stage invasive breast cancer, recently researchers found that 45% reported at least one toxicity-related side effect they ranked as either 'severe' or 'very severe'. Nearly half of women being treated for early-stage invasive breast cancer report suffering 'severe' or 'very severe' side effects from their drugs, The researchers questioned 1,945 women, The response rate was 71%, 9% made a special appointment at their cancer clinic to tackle the side effects; and 5% sought help from a hospital or emergency department, the results reveal. When the researchers examined the data in more detail they found that undergoing chemotherapy alone was associated with reporting a higher toxicity severity (odds ratio [OR] 2.2; 95% confidence interval [CI] 2.0-2.5) as was receiving both chemotherapy and radiotherapy (OR 1.3; 95% CI 1.0-1.7). The researchers say their finding of "differential toxicity patterns" may help clinicians when reviewing the risks and benefits of breast cancer treatment options, and that supportive care programmes for a wider range of patients, not just those undergoing chemotherapy, are needed.

COMMON SIGNS AND SYMPTOMS OF BREAST CANCER

Irregular lump in one or both breasts, Swelling of all or part of the breast, even if no lump is detected, Skin irritation or dimpling, Pain in the breast or nipple, Nipple retraction (nipple turning inward), Redness, scaliness or thickening of the nipple or breast skin, Nipple discharge (other than breast milk), pain in armpits, redness of skin, sometimes

nipples may discharge blood, size of breast increases. The early stages of breast cancer may not have any symptoms. As the tumor grows in size, it can cause symptoms. Symptoms may include lump or thickening in the breast or underarm, change in the size or shape of the breast, nipple discharge or nipple turning inward, redness or scaling of the skin or nipple, ridges or pitting of the breast etc.

MATERIAL AND METHODS

Medication non-adherence in breast cancer prevention and treatment

Ground black pepper (*Piper nigrum*) is one of the most commonly consumed spices. Black pepper has been shown to have antioxidant, anti-inflammatory, antibacterial and antimutagenic properties and helps improve digestion. Black pepper is a dietary source of vitamin C, vitamin K and manganese. Piperine has been shown to mitigate the harmful effects of cadmium exposure. Black pepper and piperine have been shown to inhibit the development of carcinogen-induced colon and lung cancers in laboratory animals after that this black pepper given to human beings, so now a days this is useful for prevention.

Breast cancer -related effects of consuming black pepper

Piperine reduces the growth of breast cancer cells without affecting the growth of normal breast cells. Piperine has been shown to inhibit the growth and motility of triple negative breast cancer cells. One study that administered piperine-free black pepper extract to rats found that the extract reduced carcinogen-induced mammary tumors, indicating that other black pepper compounds also have chemo preventive effects. Piperine has been shown to enhance breast stem cell sensitivity to curcumin, a component of the spice turmeric. Curcumin may decrease breast cancer risk in part by reducing breast stem cell self-renewal and enhancing differentiation of breast stem cells. Piperine may enhance the effectiveness of Adriamycin (doxorubicin), Taxol (paclitaxel) and 5-FU chemotherapy.

Natural remedies of breast cancer

Traditionally medicine providers and large pharmaceutical companies have underplayed the importance of diet in breast cancer. In the practice of holistic medicine, and natural medicine, so actually I do not advocate nor discourage one type of treatment over another. This diet plan is not intended to replace a mastectomy, for example. However, specific foods can be used to not only reduce the risk of breast cancer and prevent its recurrence, but also improve recovery from conventional breast cancer treatments, namely surgery, radiation and chemotherapy. A holistic approach to breast cancer can augment benefits from each modality of treatment.

Killing cancer cells with zero toxicity to healthy cells

The researcher team applied a solution of curcumin and piperine to cell cultures at the equivalent of about 20 times the potency of what a person would take in through diet. Then a series of tests were performed on the cells to look at markers for breast stem cells and the effect curcumin and piperine had on the levels of stem cells. According to the result Piperine enhanced the effects of curcumin and the compounds interrupted the self-renewal process that is the hallmark of stem cells which initiate cancer. More good news: the compounds had no effect on the normal process of cell development known as cell differentiation.

"Women at high risk of breast cancer right now can choose to take the drugs tamoxifen or raloxifene for prevention, but most women won't take these drugs because there is too much toxicity. But not all breast cancers are estrogen driven. In fact, the most aggressive and deadly forms of breast cancer that are more likely to occur in women with strong family histories of the disease or with a specific genetic susceptibility to breast cancer are typically not affected by estrogen and tend to be difficult to treat. But due to the fact curcumin and piperine limit the self-renewal of stem cells, the spice compounds could impact malignancies whether they are estrogen sensitive or not. For the past two

decades, non-adherence to chemo prevention for breast cancer remains a major problem L.

RESULTS AND DISCUSSION

Discussion for black pepper

White pepper, which is made from the dried, mature berries of *Piper nigrum* from which the outer covering has been removed, contains significantly less piperine than black pepper. Most black peppercorns sold in the U.S. are imported from India, Indonesia, Malaysia, Brazil or Vietnam. Buying whole peppercorns protects against the possibility of purchasing ground pepper that has been mixed with other materials. Long pepper or Indian long pepper (*Piper longum*) is closely related to black pepper. The plant produces brownish-black flower spikes containing numerous tiny fruits. The spikes are typically dried and used as a seasoning in Indian and other South Asian cooking. Like black pepper, the fruits contain piperine. More traditional sterilization methods include fumigation and steam sterilization. Some of the chemicals used in fumigation are considered harmful to human health. Steam treatment results in a considerable loss of piperine content. While irradiation results in a greater loss of vitamin C in black pepper than steam treatment, it preserves most of the piperine content. Piperidine (hexahydropyridine) is a poison and should be avoided.

PREVENTION AND CURE

Breast Cancer prevention is the diet provides an example of a full day's healthy diet, inspired by Asian countries. Prevention is always better than cure. Therefore, the focus of the meals are on foods that reduce the risk of getting breast cancer or, if the person has already been diagnosed with it, foods that reduce its recurrence. Foods that have been shown to have this potential include cruciferous vegetables, black pepper and foods with soluble fiber.

Cruciferous vegetables

- It includes broccoli, cauliflower, Brussels sprouts and bok choy.
- A large study showed that cruciferous

vegetables reduced breast cancer risk by 15%. Broccoli is particularly rich in compounds known as glucosinolates, which, when ingested, are converted to sulforaphane and indole-3-carbinol. These have both been proven to have anti-cancer properties. In a large review of studies done involving more than 18000 women, researchers found that previously cruciferous vegetables reduced breast cancer risk by 15%.

Black pepper

- The key compound in black pepper, which prevents breast cancer, is piperine. In order for tumors to grow and spread, they need to form a network of blood vessels that can supply it with nutrients from the body. This is a process known as angiogenesis, proved that the dietary phytochemical, piperine, slowed down tumor growth and progression by preventing angiogenesis.

Soluble fiber foods

- Good sources of foods with soluble fiber include oatmeal, apples, nuts, lentils, pears, flaxseeds, blueberries, carrots and cucumbers. women who ate diets rich in soluble fiber over many years showed that every 10g of soluble fiber reduces a woman's breast cancer risk by 26%.

Breakfast

1. Bring milk or non-dairy substitute to boil in a saucepan.
2. Add in the oats and cook over low heat until it is thickened or until your desired consistency.
3. Top off with blueberries.
4. **Optional:** sweeten with a drizzle of honey or add flavor with a dash of cinnamon.

SIDE EFFECTS OF BLACK PEPPER

Breast Cancer Care, says unexpected side effects can cause additional stress for women being treated for breast cancer, while side effects such as hair loss and nausea caused by chemotherapy are well-

known, unexpected side effects can cause additional stress for women. "Surgery, radiotherapy and hormonal treatment may also cause side effects like pain and fatigue, lymphoedema, or menopausal symptoms such as hot flushes. These concerning findings once more highlight the need to find ways to help patients deal with the side effects of their treatment - not only to improve their quality of life but to ensure they can continue with treatments that could improve their chances of survival."

All treatments for breast cancer carry risks of side effects, with some patients being more affected by certain side effects than others. Severe side effects often occur as many breast cancer treatments are unable to target a patients' cancer cells alone, meaning that healthy cells are damaged too.

"It is essential that patients are fully informed of the risks and benefits of their therapies, and that they receive the support they need before, during and after their treatment".

DIAGNOSIS OF BREAST CANCER

Although symptoms may suggest that cancer is present, the use of diagnostic imaging can help confirm whether the cancer really exists. The following are imaging tests that may be conducted in diagnosing breast cancer: Diagnostic mammograms are x-rays of the breast where several images are taken of the area in question. Advanced diagnostic centers offer digital mammograms where the images are recorded, viewed and stored on a computer. Also, the use of digital mammography can allow for images to be sent electronically to other physicians or hospitals. MRI scans of the breast use radio waves and a strong magnet in reproducing detailed images of the body. MRIs can be used in combination with mammograms in detecting cancer for high risk individuals or can be used to better assess an abnormal area. Breast ultrasound is a test that uses sound waves to create an image of organs and tissue within the body. Ultrasounds are typically used to differentiate between benign and cancerous tumors. Breast ultrasounds should be used in combination with mammograms. Ductogram is a test that examines

the ducts where nipple discharge occurs. This is done by injecting contrast medium into the affected duct. An image is produced of the duct structure displaying any abnormalities.

TREATMENT OPTIONS

It may consist of surgery, chemotherapy, radiation therapy, hormone therapy or any combination of these treatments. Surgery is performed in order to remove the tumor in the breast and possibly surrounding tissues and nearby lymph nodes. Chemotherapy is a cancer treatment that uses anti-cancer drugs to kill or stop the growth of cancer cells. Radiation therapy is a cancer treatment that uses high-energy radiation beams to eliminate cancer cells or stop them from growing. Radiation therapy consists of external beam radiotherapy and brachytherapy or internal radiation therapy. External beam is a treatment option that uses localized high energy radiation beams to eliminate cancer cells and keep them from growing. Brachytherapy uses a radioactive substance, usually in the form of seeds which are placed directly into or near the cancer which helps to shrink the tumor., Hormone therapy is a treatment that targets specific hormones linked to the cancer cells by blocking the properties associated with cell growth.

Spices on spoons

When a woman knows her risk of breast cancer is high, she can choose to take preventative prescription medications, go through with questionable and risky breast cancer treatment, or welcome natural solutions. Medications, like most drugs of their kind, cause serious side effects and even toxicity. Meanwhile, mainstream medical treatment is over-used and risky to say the least. But, researchers have found that two spices have promise as being just as effective as these otherwise-dangerous drugs at preventing breast tumors. In their research, curcumin and piperine were applied directly to breast cells. The substances killed what are known as stem cells, which lead to possible tumor growth. Even more exciting, they didn't damage the healthy breast tissue - normal cells weren't affected.

“If we can limit the number of stem cells, we can limit the number of cells with potential to form tumors,” This isn't the only research showing how substances like turmeric can prevent breast tumors. .Turmeric has a light smoky flavor that is popular in curry and Middle Eastern dishes. Add it to rice, curry, pasta, potatoes, fish, or even eggs. Black pepper can be added to nearly anything savory. Previous research has already provided evidence that curcumin and piperine may be potential cancer treatments. However, The research shows curcumin and piperine target stem cells (unspecialized cells that can give rise to any type of cell in an organ). This is of major significance because cancer stem cells comprise the small number of cells inside a tumor that fuel the growth of malignancies. Current chemotherapy agents are useless against these cells - that's why cancer can recur and spread despite rounds of heavy duty, toxic chemo. But if cancer stem cells could be eliminated and/or their growth shut down, cancer should be controlled.

IMPORTANTANCE

They concluded that the statistically significant predictors of tamoxifen adherence were: three-month mental component summary; three-month gynaecologic symptoms in moderate alcohol drinkers; baseline vasomotor symptoms only in women assigned to tamoxifen; and three-month sexual symptoms among young women. The strongest association was observed in the three-month other symptoms in both the tamoxifen and placebo arms. Other symptoms were defined as: gastrointestinal, bladder, and musculoskeletal symptoms, weight concerns, chest pain, dry mouth, breast sensitivity, and difficulty breathing, the aim was to evaluate the worth of anastrozole [an aromatase inhibitor] in preventing breast cancer in high-risk women. Almost 64% of women taking anastrozole reported musculoskeletal symptoms which can be induced by anastrozole. However, in the placebo arm, a similar percentage of 58% reported the same symptoms, although they are not on anastrozole. Women in the placebo arm are, again, misattributing normal symptoms to those of

the drug. According to the literature review on adherence to oral endocrine therapies in breast cancer. They concluded that only half had completed the recommended five-year therapy. Patient's perception of a low recurrence risk, adverse effects, age extremes, medication cost, lack of social support, and suboptimal patient-physician communication were recognised as important factors contributing to non-adherence.

RISK FACTORS OF BREAST CANCER

Gender: Breast cancer is 100 times more common among women than men. This is because women possess more of the hormones estrogen and progesterone, which is linked to the development of cancer CELLS, Genetic inheritance: An estimated 5-10% of breast cancer cases are considered hereditary or mutations that have been passed on from parent to child., Defects in BRC1 and BRC2 genes are the most common cause for hereditary breast cancer. These particular genes help prevent cells from mutating or growing ABNORMALLY, Increased number of menstrual cycles: Women who have had more menstrual cycles due to starting at an early age (before age 12) or go through menopause at a later age (over age 55) are at an increased risk. Aging, Family history, Personal history with breast cancer, Dense breast tissue, Previous chest radiation exposure, Benign breast conditions, Women having no children or having their first child after the age of 30, Oral contraceptive use. Increased alcohol consumption being overweight, Minimal physical activity.

CONCLUSION

Breast Cancer prevention is the diet provides an example of a full day's healthy diet, inspired by Asian countries. Prevention is always better than cure. Therefore, the focus of the meals are on foods that reduce the risk of getting breast cancer or, if the person has already been diagnosed with it, foods that reduce its recurrence. Foods that have been shown to have this potential include cruciferous vegetables, black pepper and foods with soluble fiber.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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