

Remedy on Breast Cancer

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Abstract

The fundamental barrier to powerful remedy for breast maximum cancers is still multidrug resistance due to its severe natural outcomes. The triterpenoid molecule ursolic acid has been considered a capability neoplastic chemo preventive medicine. In numerous preclinical trials an aromatase inhibitor known as letrozole is used to treat Post-Menopausal Women with superior habitual and metastatic breast cancer. The authors may be able to discover a new remedy for the treatment of breast most cancers through identifying the ones who've element consequences much like those of letrozole the maximum aspect results were positioned to be shared through letrozole and the dopaminergic agonist ropinirole in line with research dopaminergic agonist's purpose apoptosis in Leukaemia, Neuroblastoma, Colon, Ovarian and Breast Cancer Cells. Heart failure, esophageal cancer, lymphedema, bone loss are the side effects observed after treating breast cancer.

Keywords: Breast Cancer; Chemo preventive medicine; Leukaemia; Heart failure.

Introduction

The World Health Organization declared in December 2020 that breast cancer has surpassed lung cancer as the most frequently diagnosed cancer worldwide.

Breast cancer is a condition in which the breast's cells proliferate out of control. Breast

cancer comes in several forms. Which breast cells develop into cancer determines the type of breast cancer. Different areas of the breast might give rise to breast cancer.

Breast cancer (BC) is defined as a phenotypically variable and heterogeneous disease caused by malignant lesions growing in the breast tissues.

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Received Date: 02-06-2024

Accepted Date: 02-15-2024

Published Date: 02-27-2024

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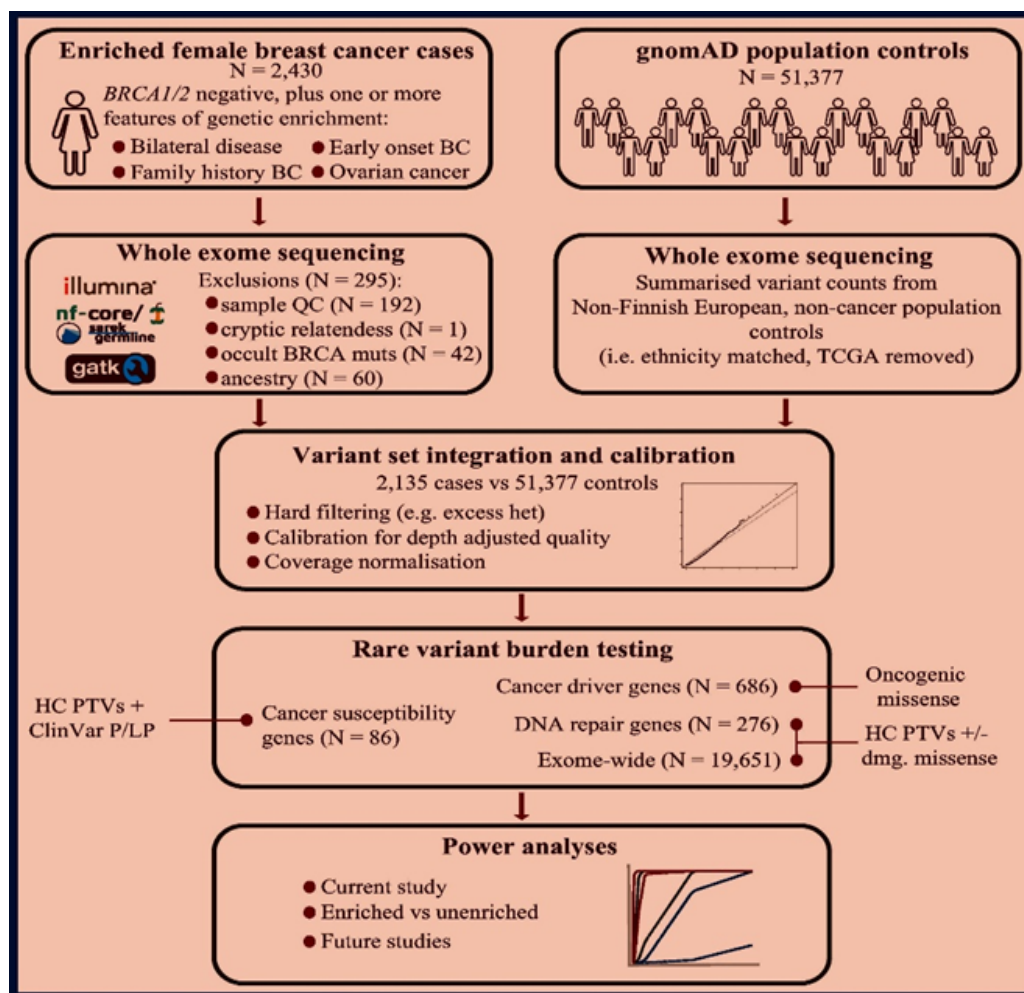


Figure 1: Epidemiological study.

Treatment for breast cancer patients can include surgery,

1. Radiation Therapy,
2. Chemotherapy,
3. Endocrine Therapy and targeted therapy.

Selection of therapy is dependent on the subtype of breast cancer and stage at diagnosis.

According to the NCI SEER summary, there are four main female breast cancer subtypes:

1. Hormone receptor (HR) positive/Human OR Epidermal Growth Factor Receptor 2 (HER2) negative,
2. HR negative/HER2 negative,
3. HR positive/HER2 positive
4. HR negative/HER2 positive [1].

A timeline and summary of breast cancer targeted therapy drug classes, based on their US Federal Drug Administration (FDA) approval year, is summarized in Figure 2.

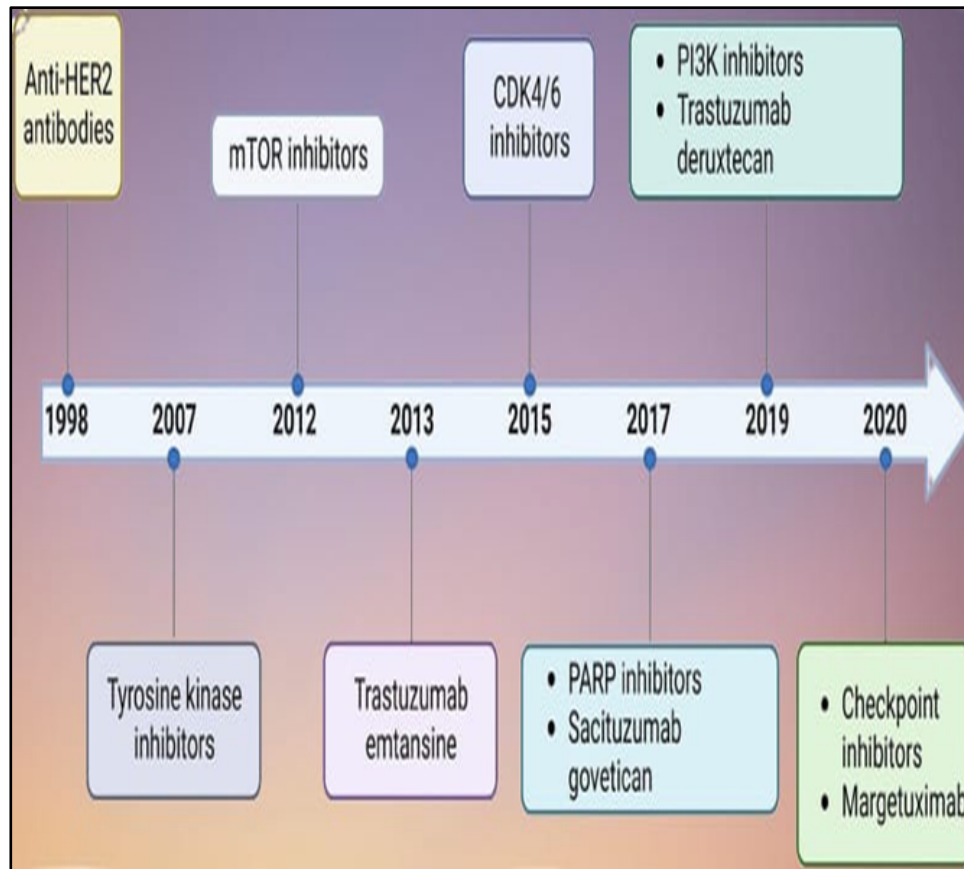


Figure 2: A timeline and summary of breast cancer targeted therapy drug classes, based on their US Federal Drug Administration (FDA) approval year.

Primary factors responsible for the occurrence and development of breast cancer are:

1. **Reproductive factors:** Women with premature menarche, late menopause, nulliparity, and women who do not breastfeed are more prone to developing breast cancer.
2. **Genetic factors:** Studies have demonstrated that a woman's chance of developing breast cancer will double if the mother has breast cancer.
3. **Dietary and lifestyle-related factors:** Obesity, and factors such

as smoking and drinking are related to the development of breast cancer.

4. **Environmental factors:** Exposure to exogenous estrogen for a long duration increases the risk of 48% of breast cancer [3].

Risk factor

1. Heredity
2. Early menstruation
3. Late menopause
4. Dense breast tissue
5. Carcinogen
6. Use of oral contraceptive

Signs

1. Painless breast lump
2. Thickness of breast skin,
3. Redness skin, change in breast shape.
4. Swelling in armpit
5. Retraction of Nipple, red colour
6. Discharge through Nipple

Symptoms

1. New lump in the breast or underarm (armpit).
2. Thickening or swelling of part of the breast.
3. Irritation or dimpling of breast skin.
4. Redness or flaky skin in the nipple area or the breast.
5. Hair loss.

Causes

1. Elevated cholesterol
2. Radiation exposure
3. Hormones
4. Chronic Inflammation

Causes in brief

Elevated cholesterol

Cholesterol is a risk factor for breast cancer although the mechanisms by which this occurs are not well understood. One hypothesis is that dyslipidemia results in increased cholesterol content in cell membranes, thus impacting upon membrane fluidity and subsequent signaling.

In addition, studies demonstrate that the metabolite, 27-hydroxycholesterol (27HC), can function as an estrogen, increasing the proliferation of estrogen receptor (ER)-

positive breast cancer cells. This was unexpected because 27HC and other oxysterols activate the liver X receptors (LXR), resulting in a reduction of intracellular cholesterol.

Resolution of this paradox will require dissection of the molecular mechanisms by ER and LXR converge in breast cancer cells. Regardless, the observation that 27HC influences breast cancer provides a rationale for strategies that target cholesterol metabolism [4].

Treatment

1. Ayurvedic.
2. Allopathy.

Ayurvedic treatment

The body is built at the tridoshas which encompass vata pitta and kapha in accordance with ayurvedic ideas. Illnesses and other fitness troubles might result from an imbalance. In these doshas most cancers develop when all the 3 doshas are out of equilibrium. This dosha imbalance which causes breast cancer is frequently because of an irrelevant weight-reduction plan and lifestyle. Additionally, the digestive system is harmed which reasons to accumulate and hinders all the body's channels collectively. These factors are guilty of breast cancers incidence.

Ashwagandha

This effective ayurvedic plant has the capability to clearly rejuvenate the body. Additionally, it aids in casting off breast cancer-associated strain sluggishness and weariness.

Curcuma

This mighty ayurvedic herb has some of therapeutic. It is an antioxidant that assists in decreasing free radical tiers inside the frame. This is effective for more potent immunity and common wellness. The herb is extremely successful at treating malignant malignancies and is able to combat off viruses and poisons.

Guggul khenarthi's

Ayurvedic product is made by using combining a spread of herbs which includes amalaki, haritaki, ginger, kachnar bark and plenty of this ayurvedic products work properly to keep cells and tissues in good condition. It additionally halts the out-of-control enlargement of malignant cells [5].

Allopathy treatment

Molecular basis of PD-1 blockades by dostarlimab, is the FDA-approved antibody for cancer immunotherapy. Dostarlimab the antibody for maximum cancers immunotherapy has a molecular basis for blocking pd-1. The usage of monoclonal antibodies to cause programmed mobile loss of life pd-1 and save from interacting with its ligand. The cause within the returned of pd-1 efficacy has inside the immunotherapy of many cancers in the recovery of the t- mobile immune response. Dostarlimab a recuperation pd-1 antibody turns out to be given FDA approval in April 2021 to deal with endometrial maximum cancers. The authors offer the 53-choice crystal form of pd-1s extracellular place in association with the dostarlimab fab despite the fact that dostarlimabs heavy chain residues play a top characteristic within the interplay amongst

pd-1 and dostarlimab. The mild chain of the drug predominantly contributes to the steric blockage of pd-1 binding induces dostarlimab to accumulate an excessive affinity pd-1s bc, cd and fg loop. Go through conformational rearrangements drastically the residue r86 in the pd-1 cd loop occupies. The concave ground on the heavy chain through a number of interactions. This is crucial for dostarlimab binding. This immoderate-choice can provide treasured facts for growing greater green anti-pd-1 biologics or effective mixture most cancers immunotherapy regimens [6].

The anti-malarial drug

The most common cancer analysis in girls is breast most cancers and patients with advanced triple-terrible and her2-enriched breast tumors have the worst prognosis. The growing novel remedy marketers is urgently highlighted through morbidity and mortality related to advanced illness. Similarly to the rise of multi-drug resistance variations. A semi-artificial by- product of artemisinin from the Chinese language. Herb candy wormwood is referred to as artesunate. Malaria sufferers tolerate paintings nicely and its miles regularly utilized. In remedy artwork is good sized because it additionally has anti-cancers house [7].

Hair loss drug

Anisomycin prevents the boom of hair cells during the lateral line improvement process chronic anisomycin publicity effects in a greater severe lack of hair cells than acute exposure. After extended publicity anisomycin should cause tp53-mediated apoptosis in hair cells. Anisomycin prevents

the division of assisting cells which can be multiplying and differentiating [8].

Synthesis, in silico and investigation of anti-breast cancer activity of new diphenyl urea derivatives

Authors created clean diphenyl urea derivatives. Compounds that have been synthesized. Computational analysis using mm-gbsa and molecular docking have been performed. Breast cancer changed into anticancer characteristics of related substances. Cancer remedy must be multidisciplinary because its far a complex infection. Breast cancer is one of the most universal cancers and is usually oestrogen receptor effective. These days chemotherapy plays a significant function in cancer treatment along surgical treatment. Due to this vast research is done to locate novel chemotherapeutic medicines. The oestrogen receptor is goal of a few medications. Now getting used to deal with breast cancer diphenyl urea spinoff compounds. The authors would target the oestrogen receptor had been recognized and produced. Due to the early analyses carried out in the preview. Have a look at the produced substances have been examined chemically in vitro exams for the biological effects. Were additionally carried out it became proven that dpuz one of the materials given to the oestrogen receptor. Breast cancer mobile line mcf-7 validated the lethal effect. In this placing the ic50 value become hooked up and it turned into discovered. That although it had a cytotoxic impact on mcf-7 cells, healthful fibroblast cells had been no longer significantly harmed. Then immune histochemistry evaluation carried out on lc3b one of the autophagy

signs. il-1 a proinflammatory cytokine lc3b and il-1 both in comparison to the manage institution expression ranges were decrease within the dpuz implemented group. Those results furnished evidence that dpuz inhibits mcf-7 tumour growth in conclusion. It became discovered that dpuz one of the five phenyl urea by-product compounds. I) produced has the capacity to be a medication in the treatment of oestrogen receptor. Breast cancer in mild of the in silico and in vitro tests. Finished within the scope of our work but in vivo and clinical investigations are required to again up the look at [9].

Evaluation of antitumoral effect of Hibiscus sabdariffa extract on human breast cancer cells

The drawbacks of preferred breast cancers therapy consist of medicine resistance metastasis and high heterogeneity. An alternate and interesting therapeutic technique is provided by using natural compounds and their metabolites. Breast cancers cellular traces mcf-7 and mda- mb-231 display off reduced cell viability migration and invasion even as dealt with sabdariffa. Sabdariffa stimulates autophagy even as inhibiting the proteasome. Down regulation of oestrogen receptors and intracellular delocalization are due to h sabdariffa. Background the maximum not unusual malignancy in girls is breast cancer. Herbal elements are a huge source of innovative healing processes which could sooner or later complement or update chemical and pharmaceutical remedies. A plant from to the malvaceae family referred to as hibiscus sabdariffa. I has received attention for its antioxidant and anticancer residences in this

examine two human breast cancers cellular lines mcf-7 er and mda-mb-231 have been used to assess the antitumoral activity. Outcomes of an enhanced fraction of hibiscus sabdariffa. I extract HsEF triple poor. Reduced the viability of each cellular lines in a dose and time established manner. This impact turned into everlasting immunofluorescence assays in mcf-7 cells confirmed that HsEF prompted er to translocate from the nucleus to the perinuclear. Inside the cytoplasmic compartment hsef decreased the expression

of the er brcal and caveolin1 genes. Proteins in mcf-7 cells but not in mda-mb-231 cells in keeping with qrt-pcr. Western blotting additionally, authors confirmed that HsEF hindered migration and invasion in both cell strains superior autophagy and reduced proteasome hobby. Conclusions suggest that HsEF has anticancer effects on both breast tumour cells. And its participation might also account for the variations visible among the two cell lines [9].

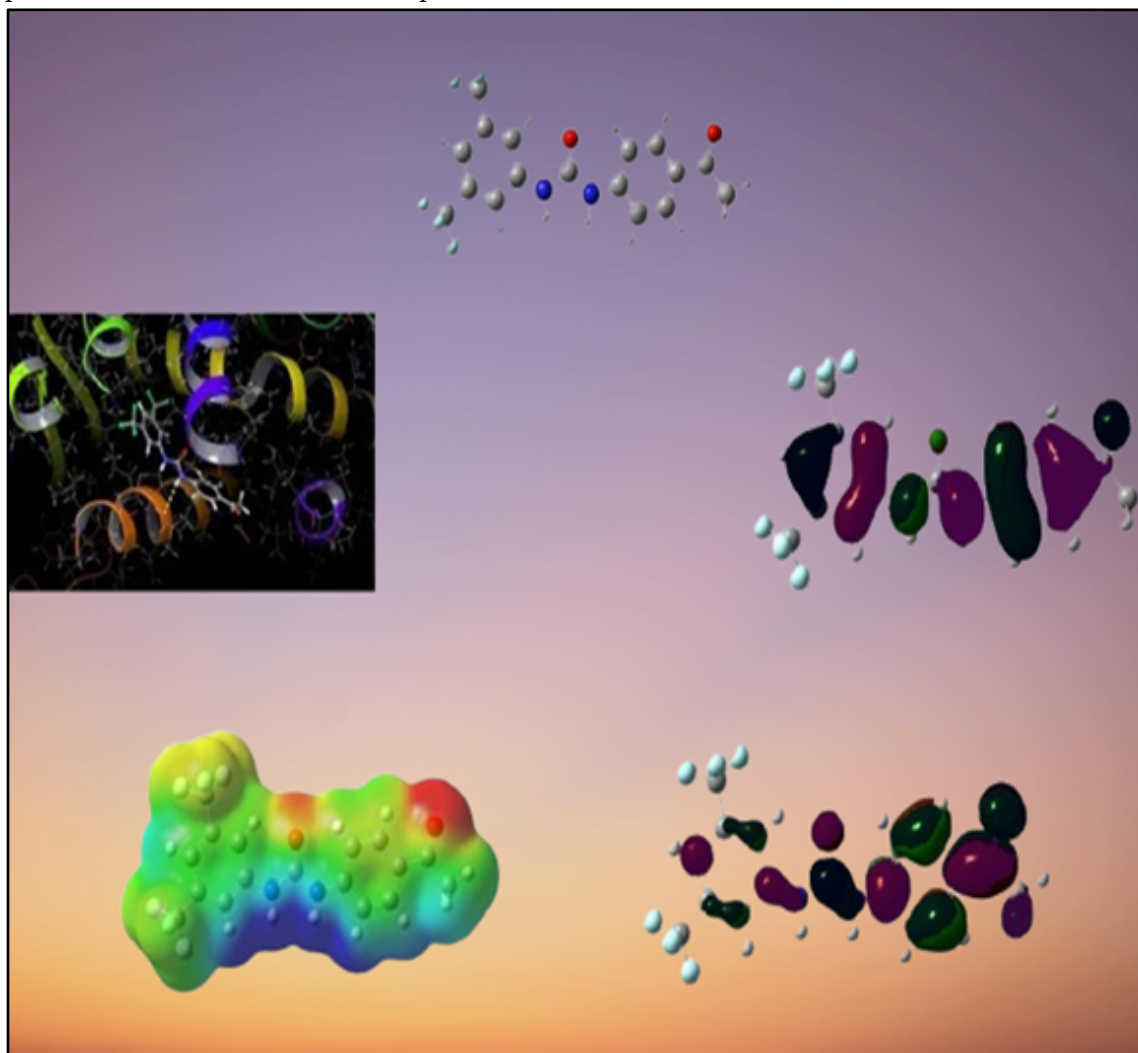


Figure 3: Docking study [9].

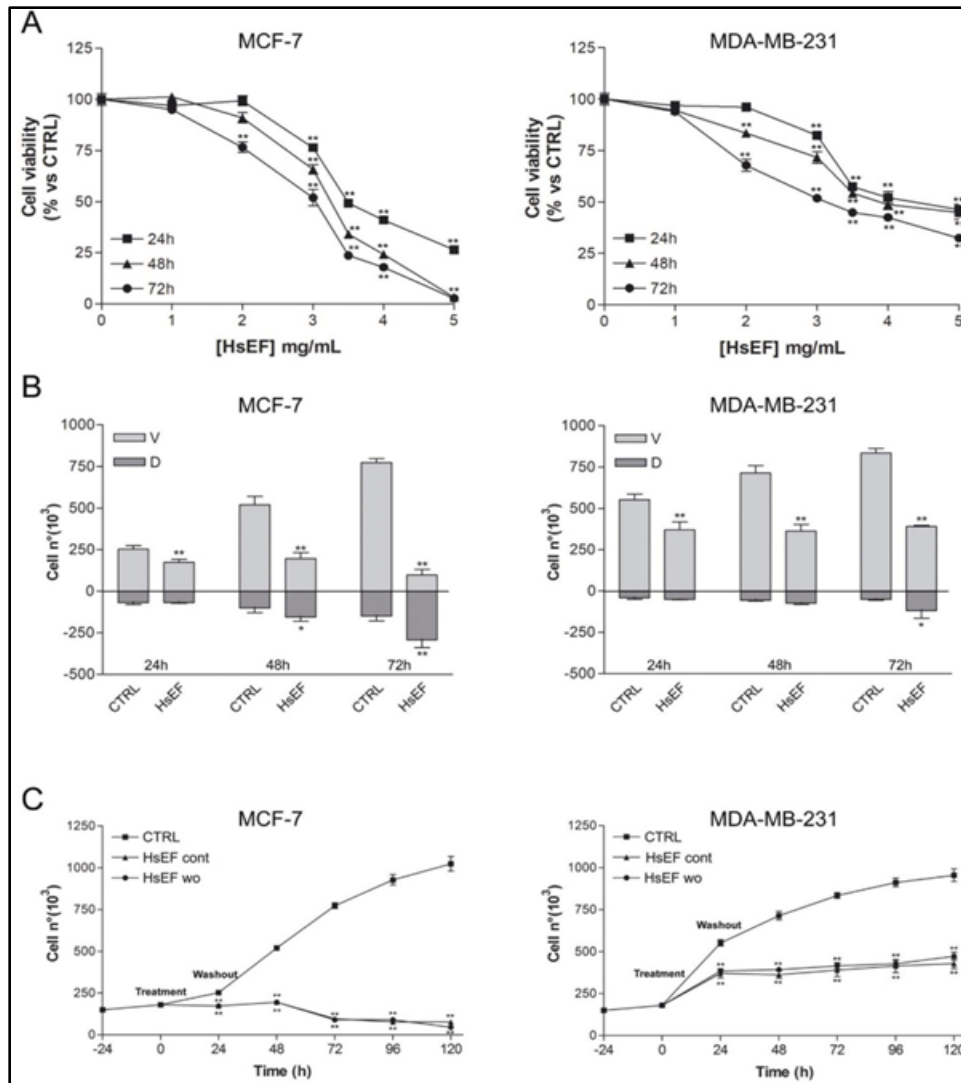


Figure 4: Evaluation of anti-tumor effect of hibiscus sabdariffa.

After HsEF remedy there have been extensively fewer viable cells in MCF-7 cells. They had been untreated controls. This amount maintained the equal for as loads as forty-eight hours earlier than declining after seventy hours of treatment. HsEF remedy appreciably decreased the large sort of possible cells in MDA-MB-231 cells. In evaluation to the untreated control the truth that the shape of feasible cells has turn out to be sturdy at some degree within the whole assessment length.

Side effects of drug

Ursolic acid augments the chemosensitivity of drug-resistant breast cancer cells to doxorubicin by AMPK-mediated mitochondrial dysfunction

Multidrug resistance is the main obstacle to effective breast cancer treatment. Ursolic acid (UA), a triterpenoid molecule with a wide range of biological activities. The subject of numerous preclinical studies as a potential neoplastic chemo preventive drug. The

authors investigated potential molecular mechanisms. In this study, UA could improve the chemosensitivity of doxorubicin-resistant breast cancer cells (DOX). Notably, authors found that in DOX-resistant breast tumours. UA treatment reduced cellular proliferation and migration and resulted in cell cycle arrest. Additionally, UA plus DOX therapy produced a more robust inhibitory effect on the growth of the MCF-7/ADR xenograft tumour model than DOX alone. A larger inhibitory effect on cell viability, colony formation, and cell migration. It also increased the amount of cell death in vitro. In terms of the underlying mechanism, UA effectively raised p-AMPK levels while concurrently lowering p-mTOR and PGC-1 α protein levels. Impairing mitochondrial

function by inhibiting mitochondrial respiration, depleting ATP, and producing too many reactive oxygen species (ROS). Additionally, UA increased the formation of intracellular ROS, which led to a cell cycle arrest in the G₀/G₁ phase. Produced a DNA damage response. Additionally, UA reduced aerobic glycolysis by preventing Glut1 from being expressed and functioning. When taken as a whole, the data showed that UA increased the vulnerability of DOX-resistant.

Breast cancer cells' susceptibility to the drug by focusing on energy metabolism via the AMPK/mTOR/PGC-1 signaling pathway. Therefore, may be a candidate for adjuvant chemotherapy in MDR breast cancer [10].

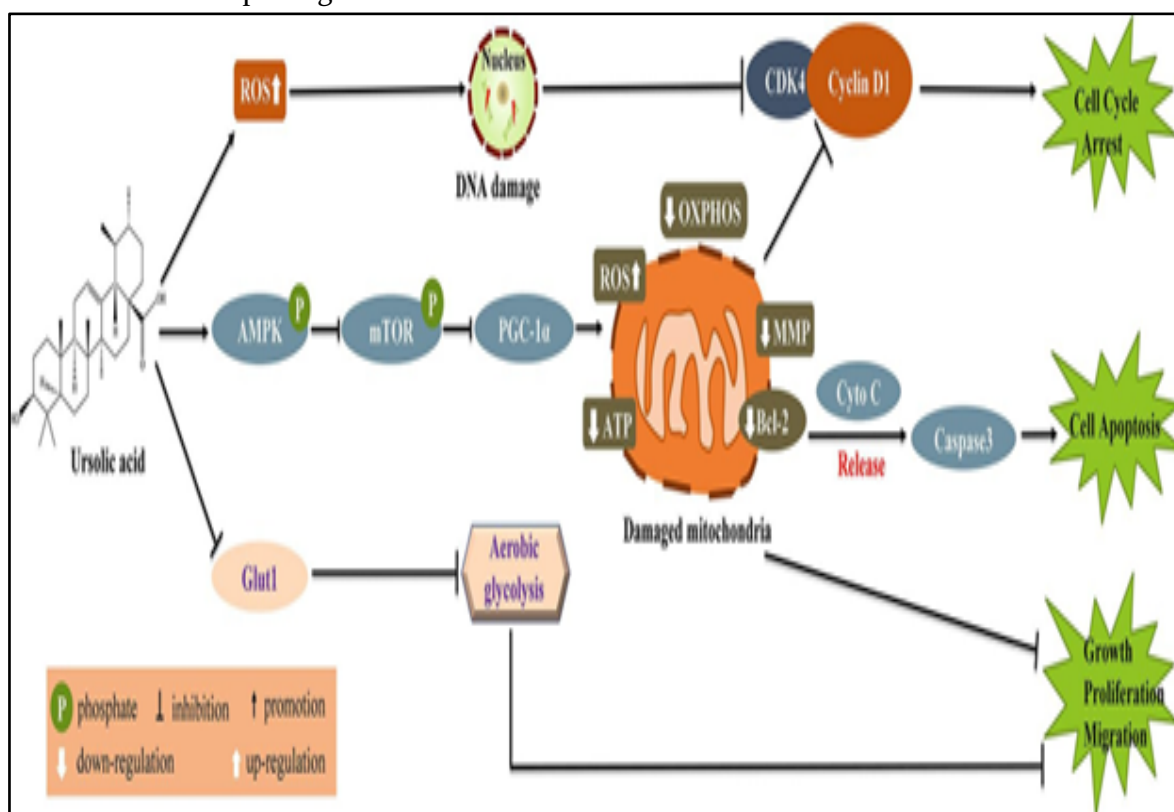


Figure 5: Ursolic acid augments the chemosensitivity of drug-resistant breast cancer cells.

Long-term risk of heart failure in breast cancer patients after adjuvant chemotherapy with or without trastuzumab

Trastuzumab has improved prognosis for HER2-positive breast cancer patients. It can potentially lead to HF or left ventricular dysfunction while being treated. The danger of long-term HF is less certain. Treatment options for invasive, early-stage (nonmetastatic) breast cancer may include surgery, radiation therapy, systemic chemotherapy, targeted biologics, and hormone therapy, depending on the biology and burden of the tumour. Prior to the

creation of anti-HER2 targeted therapy, 20% of breast cancer patients had HER2 receptor over expression which was linked to a poor prognosis and a considerable risk of cancer recurrence. A standard care for patients with HER2-positive breast cancer is the addition of trastuzumab. An anti-HER2 monoclonal antibody, to traditional chemotherapy. It is advised to regularly monitor cardiac function by measuring left ventricular ejection fraction (LVEF) before, during, and after treatment with trastuzumab. Because it presents a risk of cardiac dysfunction and heart failure (HF), particularly when given with anthracycline-based chemotherapy.

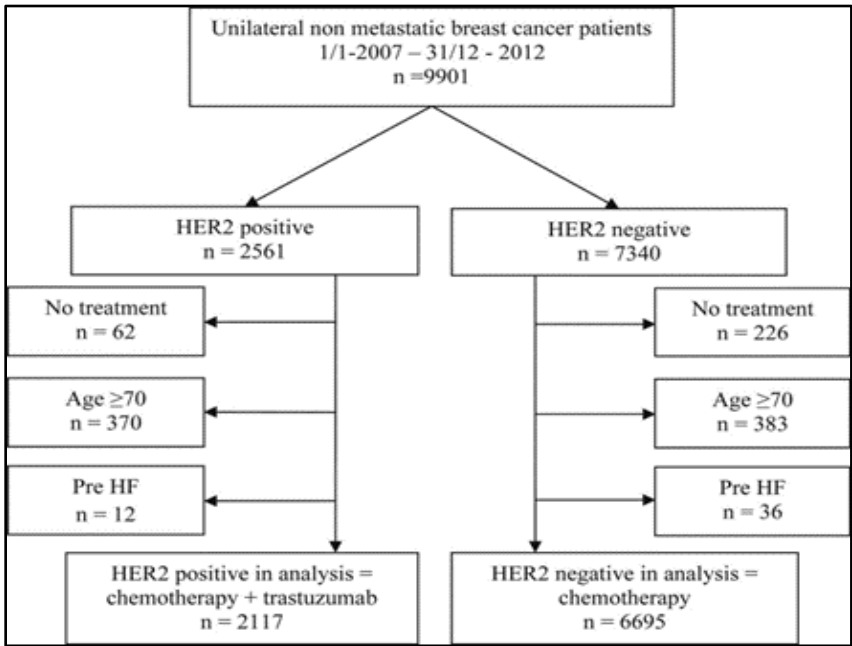


Figure 6: Chemotherapy effect.

9901 sufferers scheduled to undergo adjuvant hospital treatment. Surgery for unilateral non metastatic breast cancers had been decided inside the dbcg database. 1089 of them had been dropped from the test because they did no longer get hold of therapy. 288 were younger than 70 n 753 or had an evaluation of

hf previous to the discovery of breast cancers. 48 the final 8812 patients had been divided into 2117 her2-fine patients who have been given chemotherapy and trastuzumab remedy. 6695 her2-poor patients who best acquired chemotherapy as adjuvant remedy the consort diagram offers info Figure [11].

Surgical treatment

Breast cancer lymphedema

Water, protein, and different waste are the number one additives of lymphatic fluid. It's released into the interstitial place through capillary beds.

Underneath everyday sports, lymphatic fluid is taken up through lymphatic capillaries and pumped in the route of the thoracic duct, wherein it ultimately returns to the venous flow.

Even as lymphatic systems are broken, protein-rich lymphatic fluid accumulates in the interstitial, which causes edema and irritation before irreversible changes alongside fibrosis and fat deposition.

The diploma of axillary surgical operation, growing BMI, and receiving regional nodal irradiation. The 3 important danger factors for the emergence of breast maximum cancers-associated lymphedema. It shows that a lower hazard of lymphedema is associated with another dissected axilla. The radiotherapy area sooner or later of local nodal irradiation. A dreaded aspect effect of the treatment for breast cancers is lymphedema, or BCRL.

Introduction

Even during course of treating invasive breast cancer a severe consequence known as breast cancer-related lymphedema bcrl. Might develop this review will concentrate on the upper extremity because it is much more morbid than edema in the trunk or breast lymphedema. It occurs in several sections of the upper body anatomy along with the breast

trunk and upper extremity in relation to breast cancer. The reported rates of bcrl range from 5 to 50 which is quite a broad range. This incredibly wide range of estimates is due to the fact that different series contain patients with a variety of risk variables measuring methods and diagnostic standards.

Notably, there is no agreed-upon description of what BCRL is, nor is there a set limit for the increase in limb volume or circumference. That marks the transition from the unaffected to the impacted states. This variety undoubtedly made it more difficult to analyze the literature.

The risk factors for BCRL development, its pathophysiology, fundamentals of screening, tried-and-true and cutting-edge treatment options, and preventative measures are all covered in the review that follows.

Pathophysiology

1. Breast cancer itself, cancer treatment, and a patient's unique physiology all play a role in the development of BCRL.

The lymphatic system is made up of one-way channels that have two main functions and interact with the immune and cardiovascular systems. First, the body's immune surveillance is greatly aided by the lymphatic system, which is a significant producer and activator of immune cells.

2. Through the activation of B and T cells, lymph nodes serve as filters that identify and combat infection. An essential step in the development of adaptive immunity. Second, by

recycling fluid back into the bloodstream, the lymphatic system prevents buildup in the interstitial.

3. Breast cancer, most cancers treatment, and an affected person's physiological predisposition all have a role inside the improvement of BCRL.
4. The lymphatic device is made up of 1-way channels which might be connected to the immune and circulatory systems and serve the most important features. First, the lymphatic system performs an important function within the body's immune surveillance and is a primary producer and activator of immune cells.
5. Lymph nodes serve as filters that permit B and T lymphocytes to realize and combat infection. An essential step inside the improvement of adaptive immunity. The lymphatic machine recycles fluids into the bloodstream to prevent interstitial fluid build-up.
6. Bloodstream waste is expelled from capillary beds into the interstitial to create lymphatic fluid. Lymph or lymphatic fluid is the term for this waste liquid. Water, damaged down pink and white blood cells, proteins, fatty acids, overseas particles, and microbes make up most of the people of the lymphatic fluid's composition (four, five). In a healthy character, this fluid is usually reabsorbed by means of lymphatic capillaries and transported returned in the direction of the thoracic duct and ultimately the heart through lymphatic arteries and nodes. Diaphragmatic respiratory,

newly gathered lymph fluid, skinny slips of smooth muscle that sporadically border the lymphatic vasculature, contraction of the encircling skeletal muscle, and arterial pulsation all make contributions to the vital pumping motion.

On common, the lymphatic gadget handles about 5 L of lymphatic fluid according to day 7 [12].

Impact of breast cancer and its treatment on bone loss and fracture risk

Within the USA, breast cancer (BC) is the most normal form of most cancers in women and is responsible for over 40,000 annual fatalities. Globally, 1 in eight ladies will get BC at some stage in their lifetime. Due to improvements in early prognosis and individualized medicinal interventions over the past few many years, long-time period survival has extensively improved. As a end result, it's much more likely that most cancers treatment facet effects including bone loss and fractures would persist through the years.

A recent healing tenet for diagnosis, prophylaxis, and bone-directed remedy in women with early BC for stopping fractures, specially all through aromatase inhibitor remedy, has been presented in a global function announcement of seven bone and most cancers societies. Similarly, to discussing the scientific use of adjuvant bisphosphonate and denosumab remedy to prevent ailment development and enhance. BC-associated survival, this publication will offer an overview of the analysis and remedy

of cancer remedy-brought about bone loss in girls with BC.

Effects from the medical research that are presently available suggest that the remedy for breast cancer has a significant impact on bone turnover, BMD, and fracture danger. For all third-technology aromatase inhibitors, for instance, this holds true. For these reasons, it's widely cautioned that breast cancer patients interact in regular exercise and daily calcium (1,500 mg) and diet D (800 UI) dietary supplements. Maximum professionals suggest that prior to starting clinical castration or aromatase inhibitor remedy. All woman sufferers ought to be evaluated for their hazard of osteoporosis and have their bone mineral density (BMD) measured the use of dual-power X-ray absorptiometry (DEXA).

Sufferers with pre-present osteopenia and osteoporosis must be assessed for ailments such diet D deficiency, hyperparathyroidism, hyperthyroidism, and hypercalciuria that exacerbate bone fitness. Proof that AIs boom fracture danger while in comparison to placebo is confined. Regardless of the fact that information from placebo-controlled studies on surrogate endpoints of osteoporosis, consisting of bone mineral density (BMD) or organic markers, show that AIs cause bone loss [6-8]. In a single RCT, which blanketed handiest of a small quantity of patients with early breast cancers (n=129) or ductal carcinoma-in situ (n=18), an extended fracture threat connected with exemestane in comparison to placebo was not discovered. Consequently, tamoxifen-controlled trials provide most people with fracture evidence. According to these studies,

women taking AIs revel in a fifteen% to 113% better fracture rate than those taking tamoxifen. Ladies who use AI for some years have a 20–35% higher danger of fracture. It's doable that a portion of the improved fracture risk. This is attributed to the rise in bone turnover introduced on by AIs really results from the reduction in bone safety introduced on via tamoxifen utilization. However, as compared to bone loss in postmenopausal girls who're healthy, bone loss brought on by way of breast cancer remedy is commonly extra extreme and quick. Therefore, compared to their contemporaries, breast cancer patients have a higher incidence of osteoporosis. For instance, Kanis, et al., discovered that breast cancer patients had a 5-fold higher prevalence of vertebral fractures than women of the same age (odds ratio 4.7, 95% CI 2.3-9.9). Additionally, osteoporosis raises mortality rates: hip or vertebral fractures are linked to a 20% rise in mortality rate after five years [13].

Risk of treatment-related esophageal cancer among breast cancer survivors

The esophagus can be exposed to ionizing radiation inside the path of radiotherapy for breast cancers. But no have a observe has looked at the threat of growing esophageal cancers.

Breast cancers associated with radiation dose or systemic remedy use no matter. The reality that clearly the risk is minimum esophageal cancers is a radiation dose-associated detail effect of radiotherapy for breast cancers. The hazard wants to be considered in radiation threat evaluation and prolonged-time period have a take a look at-up with greater esophageal doses [14].

Techniques useful after chemotherapy

1. Cardiac magnetic resonance could detect the decreases in LVEF after chemotherapy.
2. Parametric mapping could detect myocardial damage caused by chemotherapy.

Psychological reactions to breast cancer in the pre- and post-surgical treatment period

Rage despair and worry are examples of psychological discomfort. Alterations in behavior brought by physical discomfort. Disruptions in relationships or sexual activity and variations in activity levels. The 3 worries about dying after a mastectomy because it necessitates partial or complete removal of an organ. That is closely linked to one's sense of self-image, self-worth, attractiveness femininity sexuality and ability to reproduce and provide for one's family.

Breast cancer treatment is particularly emotionally taxing the effects of breast cancer such as mortality disfigurement, incapacity disruption of daily life. Need on others for care and support are universally feared by women. However, the degree of psychological anguish varies greatly. This variation is explained by clinical element's location stage remedies received and accessibility to rehabilitation offerings. Along with breast reconstruction, mental elements preceding adjustment coping skills emotional adulthood disruption of identified and

desires. The potential to modify plans psychosocial elements accessibility to emotional support from own family buddies. The remedy group and societal factors the environment in which sufferers are treated [15].

Conclusion

The reasons, symptoms and remedies of breast cancer were included within the content that came earlier. Then, authors also talk about how healing procedures can have aspect outcomes on a number of the many issues. Breast cancer is one of the most common diseases. The numerous side effects of breast cancer are illustrated by these facts: both clinical and surgical methods of treatment are feasible for breast cancer. Medicinal plant use is essential for most cancers due to the drawbacks of modern-day medicine, herbal treatments have already attracted people interest. This report can offer an awesome precise of the signs and symptoms, preventative measures, ayurveda and allopathic treatments facet outcomes of surgical and clinical processes. In addition to offer the possibility to become aware of precise ayurvedic and allopathic remedies for breast cancer to heighten.

Future aspects

No matter the fact that the possible use of mammography-primarily based absolutely radiomics appears promising more studies are needed to assess its dependability as a desired healing tool.

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Sribhavani KR | Volume 6; Issue 1 (2024) | Mapsci-JCMR-6(1)-149 | Review Article

Citation: Arote SR, Ganage A, Dongare K, Chavan S, Sribhavani KR. Remedy on Breast Cancer. J Clin Med Res.

2024;6(1):234-49.

DOI: [https://doi.org/10.37191/Mapsci-2582-4333-6\(1\)-149](https://doi.org/10.37191/Mapsci-2582-4333-6(1)-149)

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