

# Cancer Therapy

Sukanta Satapathy<sup>1\*</sup>, Chandra Sekhar Patro<sup>2</sup>, Ganesh Patro<sup>3</sup>, Madhulita Panda<sup>4</sup>, Abinash Patra<sup>5</sup>

<sup>1\*, 2, 5</sup>School of Pharmacy, Centurion University of Technology and Management Odisha, India.

<sup>3, 4</sup>College of Pharmaceutical Sciences, Berhampur, Mohuda, odisha, India

\*Corresponding Author: Sukanta Satapathy

\*Centurion University of Technology and Management, Odisha, India. Email: Sukant.satapathy@cutm.ac.in

DOI: 10.47750/pnr.2023.14.02.429

## Abstract

Cancer is a threat to humanity in this era. The new cases are sharply increasing. The cancer death also a major problem of the recent time. In this review the various treatment options available are described. The cancer types also explained. The WHO data of various new cases of cancer are depicted in the form of graph. The alternate therapies are reviewed. These alternate therapies are a hope now for the future cancer therapy. The future prospects of cancer therapy also explained.

**Key words:** Cancer, Therapy

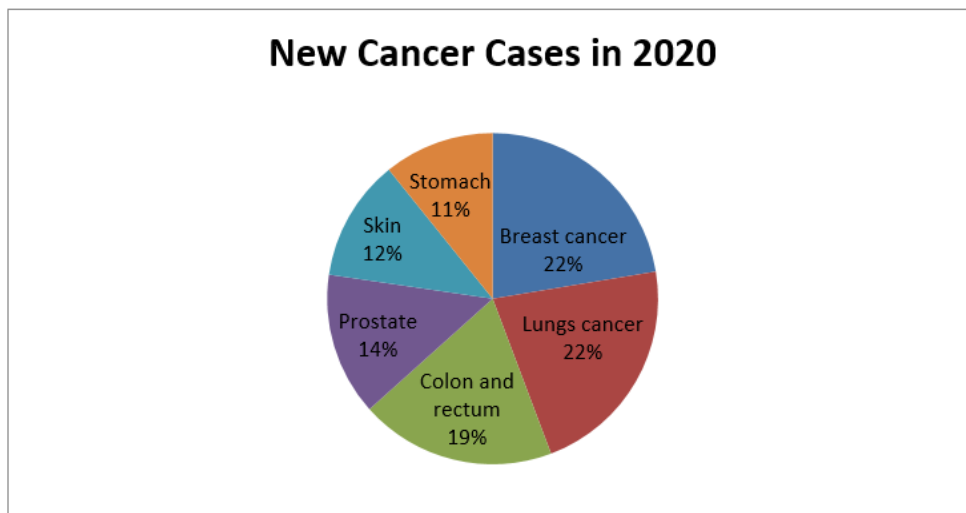
## INTRODUCTION

Non communicable disease are the major health concern in the world in current time.[1]Cancer, causing a major health threat in this century, affecting 185 countries and killing 9.9 million people worldwide by 2020. The worldwide death enlist Cancer, as a major cause, and in the past decade, researchers have explored new therapies to reduce the side effects of conventional treatments.[2] The most common cancers, according to WHO key facts, are breast, lung, colon, and prostate cancers. The leading causes of cancer deaths include tobacco use, obesity, alcohol and tobacco consumption, inadequate fruit and vegetable consumption, and physical inactivity.[3] In cancer, abnormal proliferation of cells leads to uncontrolled growth of cells. The lack of selectivity for tumor tissue, may cause side effects and low therapeutic activity.[4]

The WHO data shows the most common cancer in 2020 (number of new cancer cases) were shown in table1 and graphically represented in Figure -1. The most common causes of cancer death in 2020 were given in the table -2 and graphically represented in Figure -2.

**Table-1:** Who data of new cancer cases in 2020.

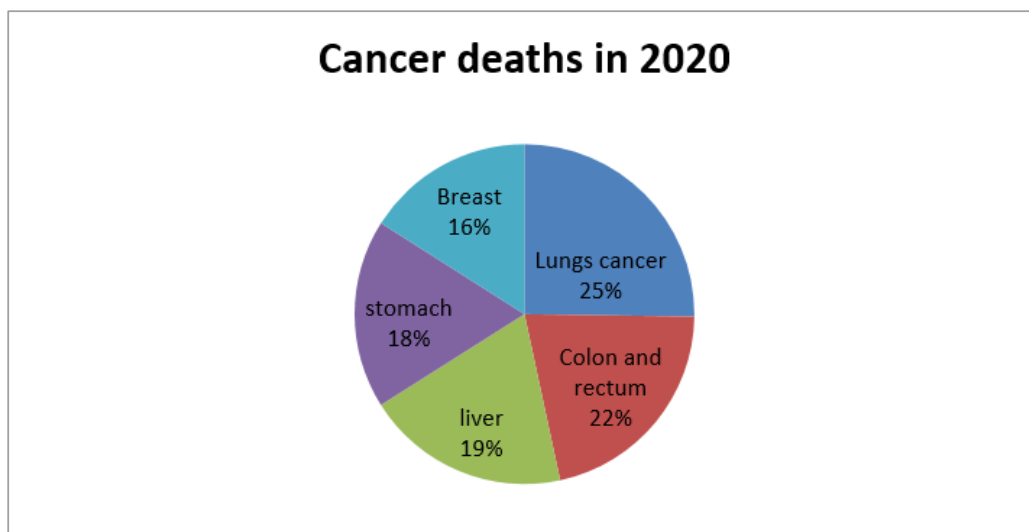
| Cancer Types     | Cases in Millions |
|------------------|-------------------|
| Breast cancer    | 2.26              |
| Lungs cancer     | 2.21              |
| Colon and rectum | 1.93              |
| Prostate         | 1.41              |
| Skin             | 1.20              |
| Stomach          | 1.09              |



**Figure -1:** pie chart of new cancer cases in 2020.

**Table-2:** WHO Cancer death data of various cancers in 2020.

| Cancer Types     | Cancer Death |
|------------------|--------------|
| Lungs cancer     | 1.80 million |
| Colon and rectum | 916000       |
| liver            | 830000       |
| stomach          | 769000       |
| Breast           | 685000       |



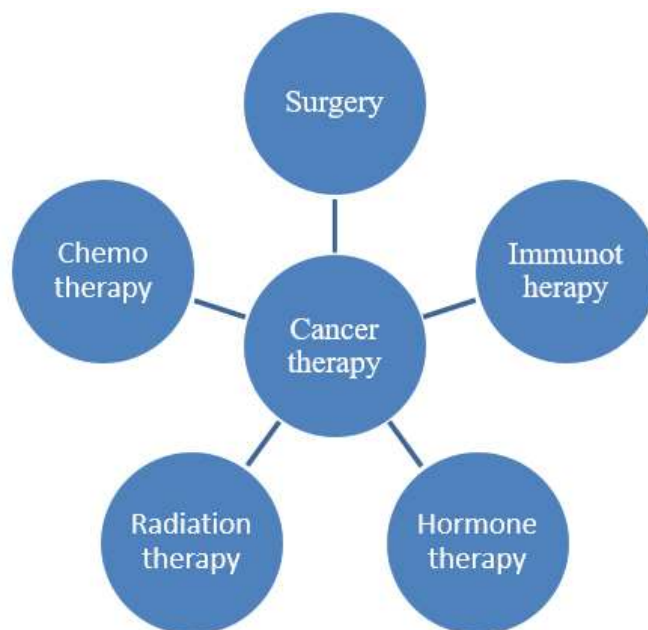
**Figure -2:** pie chart of cancer death cases in 2020.

## TYPES OF CANCER

The various types of cancer are breast cancer, colon and rectal cancer, Lung cancer, Prostate cancer, Skin cancer. Cancer of the bladder, Cancer in the eyes, Pancreatic cancer, Colorectal cancer. Kidney cancer, Cervical cancer, Oral cancers, Liver cancer, Ovarian cancer, Prostate cancer.[5]

## CANCER THERAPY

The cancer treatment are of the following types. Which is represented in the figure.



**Figure -3:** Types of Cancer therapy

### Chemotherapy:

The term chemotherapy refers to a treatment method that uses drugs to kill cancer cells and fast growing cells in the body. Various cancers can be treated with chemotherapy drugs either alone or in combination. The unwanted chemical reactions and development of multi drug resistance in chemotherapy are the disadvantage of chemotherapy. [6] The chemotherapy carries side effect which are mild to serious complications. The side effect of chemotherapy are nausea, hair loss, fever, loss of appetite, mouth sores, pain, bleeding etc.[7] Chemotherapy given by infusions, pills, shots and creams.[8] Cancer-specificity and toxicity of approved cytostatic drugs are relatively low.[9] The nanotherapeutics can be an alternative for the chemotherapy to reduce the side effects.[10] Various drugs are delivered through the nano carriers to treat cancer. [11], [12] Nano structured lipid carriers are also used to deliver various drug to improve the drug .[13]

### Hormone Therapy:

Cancers that use hormones in their growth are treated with hormone therapy, hormonal therapy, or endocrine therapy. The breast cancer and prostate cancer uses hormones in their growth. Cancer growth is slowed or stopped by hormone therapy. [14] Stop the body from producing the hormone. Alter the hormone so it doesn't work as it should so that it cannot attach to cancer cells.

### Immunotherapy:

Immunotherapy is the cancer treatment which involves the immune system fighting cancer. It uses the body's immune system to treat, prevent, and eliminate cancer. Immuno-oncology is the alternate term for immunotherapy of cancer. The therapy assist the immune system in recognizing and attacking specific types of cancer cells, revitalize immune cells to aid them in eliminating cancer, and provide the body with elements that enhance the immune response. Targeted antibodies are a part of immunotherapy. Other therapies are Cancer vaccines, adoptive cell transfer, tumor-infecting viruses, checkpoint inhibitors, cytokines, and adjuvants regarded as immunotherapy.[15] Immunotherapy and oncolytic virus (OV) therapy are biological therapies, are more physiological and shows to be well tolerated.[9]

### Radiation Therapy:

In this therapy high radiation levels kill cancer cells so as a result the tumor cells are shrunk. Radiation therapy works by destroying the DNA of cancer cells and inhibiting their ability to divide and grow by using high-energy radiation. Radioactive sources can be placed inside the patient either temporarily or permanently via linear accelerators or radioactive sources. Cancer patients can receive radiation therapy to cure the disease or to relieve the pain they suffer.[16] Using high-powered beams of radiation, radiation therapy kills cancer cells, such as X-rays or protons. Depending on the type of radiation treatment, it can either be applied outside your body (external beam radiation) or inside your body (brachytherapy).[17]

### Surgery:

An operation with the goal of treating cancer is one in which a surgeon removes cancer from the body. A cancer surgery is an operation or procedure intended to remove a tumor and possibly some tissue nearby. These include laparoscopic surgery, laser surgery, cryosurgery, which uses liquid nitrogen to freeze the cancer cells which are abnormal cell. and Mohs surgery for treating skin cancer.[18] Non-invasive focused ultrasound (FUS) can effectively treat human breast

cancer without invasive surgery using a combination of imaging guidance and energy delivery. Treatment that isn't invasive prevents infections, reduces recovery time and lowers costs.[19]

### Targeted Therapy:

Cancer targeted therapies target the changes that cancer cells go through to grow, divide, and spread. Due to its exact targeting of cancer cells and not targeting to cells, targeted therapy is gaining popularity. Targeted therapy involves several methods, including monoclonal antibodies, prodrugs, small molecule inhibitors, and nanoparticulate antibody conjugates.[6]The nanoparticle drug formulations are providing enhanced safety and therapeutic profile as compared to conventional chemotherapy.[20], [21] The lipid-based nanomedicine formulation against cancer, has been seen to improve the anticancer therapy by drug localization into the tumor tissue and minimizing their systemic side effects.[22], [23]

### Stem Cell Transplant:

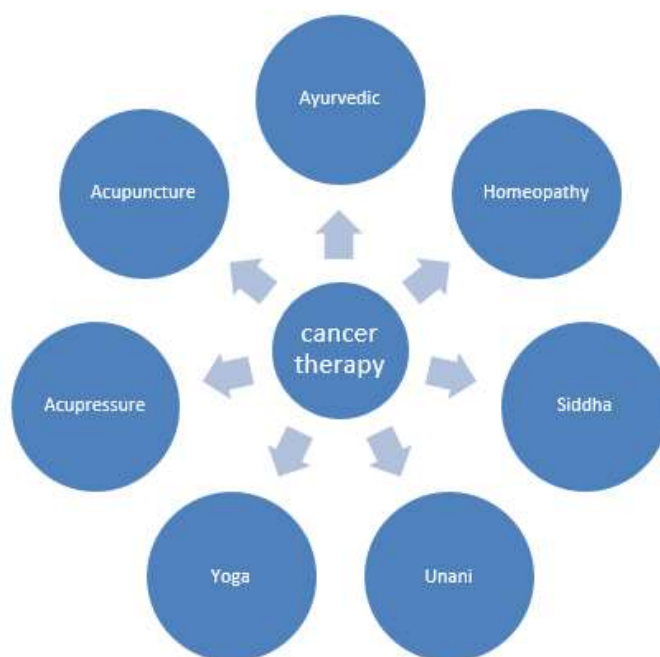
In stem cell transplants, stem cells that are responsible for developing into blood cells are restored to individuals whose stem cells have been destroyed by high doses of chemotherapy or radiation. In today's stem cell transplants, healthy blood-forming stem cells are injected into the vein. If stem cells are injected into the bloodstream, they travel to the bone marrow to replace damaged ones. [24]

### Hyperthermia therapy:

Radiation and chemotherapy can be more effective against cancer cells when tumors are heated up (hyperthermia). The technology used for clinical hyperthermia therapy for the treatment of cancer. By raising the tumor's temperature (hyperthermia), cancer cells become more susceptible to radiation and chemotherapy.[25]

### Alternative medicines for cancer

Worldwide, complementary and alternative medicine (CAM) approaches are being used to treat cancer.[26] The various alternate therapies are ayurvedic, homeopathy, siddha, unani, yoga, acupressure, acupuncture, herbal therapy for cancer. The detail is explained in the figure 4



**Figure-4:** Types of alternate therapies of cancer.

### Ayurveda and herbal therapy for cancer

The ayurveda is a oldest indigenous complementary and alternative medicine to manage and treat cancer. This consists of herbal preparations, Yoga, meditations and diet. Homeopathy also used as an alternative therapy of cancer.[27] Ayurvedic therapies are also provides an integrated approach for cancer management.[28] various herbal drugs used for cancer treatment induce apoptosis and stops cancer, includes phenolic compounds of curcumin, Ginger ,resveratrol, flavonoids, terpenoids.[29]

### Homeopathy for cancer

Cancer patients commonly use homoeopathy as an alternative treatment. Throughout the world, it is widely used as a palliative and curative treatment for cancer patients.[30] Treatment for cancer with homeopathy is one of the most common complementary approach. The alternative medicine procedures also homeopathy which is used to treat cancer.

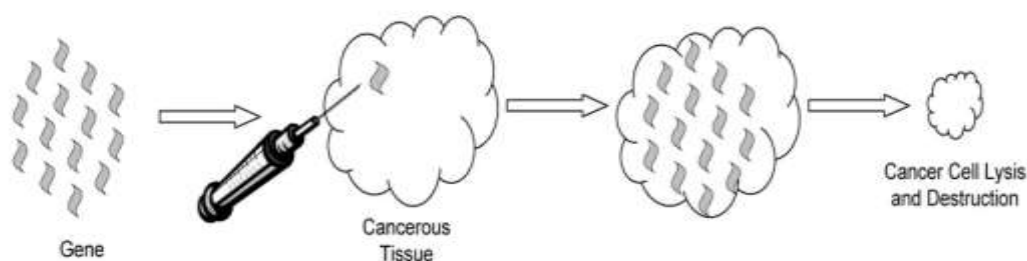
[31] Homeopathic medicines are used along with cancer treatment. During the radiotherapy there is a chance of acute dermatitis. Topical calendula can prevent this skin infection. While Traumeel S mouthwash can treat chemotherapy-induced stomatitis. so the homeopathic treatment can also be used to reduce the symptoms of cancer.[32][33] MAT-LyLu prostate cancer cells were injected into Copenhagen rats to study the effects of homeopathy on cancer progression and mortality and it is found that the homeopathy slow the progression of cancer.[34]

### Yoga for cancer treatment

Yoga is a supportive care for the cancer patients. The Cancer patients who receives the chemotherapy, radiotherapy, and survivors are able to benefit from gentle, safe, and effective yoga practices to address the various issues of sleep disruption, cancer-related fatigue, cognitive impairment, psychosocial distress. Yoga also beneficial in musculoskeletal symptoms. Hence, it is essential that their patients suffering from harmful toxicities are referred to qualified yoga professionals if they are suffering from any of these toxicities. In order to confirm these findings and investigating research methods of yoga therapy and for cancer-related toxicities in patients and survivors, phase III clinical trials are needed.[35]

### Gene therapy for cancer

A new treatment modality that involves transferring genes onto cancerous cells or surrounding tissues causes cell death or slows cancer growth.[36] In gene therapy, a therapeutic gene is transfected into the host cells so it can express itself and cause a biological benefit.[37] Various chronic diseases, like cancer, can be prevented and treated with natural products that target multiple gene products.[38]



### Acupressure and acupuncture

Cancer-related fatigue (CRF) is effectively managed with acupuncture and acupressure in adults with cancer. The former produces a greater improvement in CRF than acupressure, which tends to be more effective in relieving it.[39] The management of chemotherapy-related nausea and vomiting is made easier by complementary therapies, such as acupressure, that are safe and convenient.[40] An evidence level of moderate was found in this systematic review and meta-analysis that acupuncture and/or acupressure were significantly associated with decreased cancer pain and decreased analgesic use.[41]

### Integrative medicine for Cancer

Integrative medicine physicians provide nutritional guidance and supplement recommendations, referring patients to a variety of complementary treatments (e.g., acupuncture, reflexology, yoga, meditation).[42] For cancer-related fatigue (CRF), integrative therapies are commonly used, however, evidence supporting these therapies is inconclusive.[43] As cancer-related pain becomes more prevalent, complementary and integrative therapies are in demand.[44] As part of integrative medicine, In order to achieve optimal health and healing, all appropriate therapeutic approaches, professionals, and disciplines are employed. Nutritional counseling, biobehavioral strategies, physical activity promotion, and supplements such as herbs, nutraceuticals, and phytochemicals are part of the program.[45] The most common use of complementary and integrative therapies during and after breast cancer treatment is for managing symptoms, preventing toxicities, and improving quality of life.[46] Using non-pharmacological methods, integrative oncology seeks to relieve the physical, emotional, and psychological symptoms of cancer survivors.[47]

### Spices used for cancer

Various spices are used for treatment of cancer. Cancer prevention and treatment are aided by spice herbs. A lower cancer risk was associated with consuming more fresh fruit, raw vegetables, onions, garlic, and spices. The bioactive food components of various spices are having anticancer properties.[48] Spice based active constituents which are widely known for their chemo preventive action against various malignancies are curcumin and curcuminoids (turmeric), allicin, allyl isothiocyanate (garlic), gingerol, zingiberene, zingiberene (ginger), piperidine, piperine, (black pepper), crocetin, crocin and safranal (saffron) and others. Common spices play an important role in fighting cancer, according to the present review.[49] Additionally, fenugreek is said to possess anticancer qualities as a result of its helpful chemical components that are active. FCE has the potential to be used as a supplemental therapy for breast cancer patients because of its capacity to boost the expression of genes that promote apoptosis. [50] A wide range of chronic inflammatory disorders, including cancer, are also prevented and treated with the use of spices. [38] The various spices shows various levels of anticancer activities and the further studies need to standardize the system for further treatment and therapy.[48]

## Chinese medicines for cancer

Traditional Chinese medicine is practiced for treatment of cancer from thousand years .The traditional Chinese medicine stops cancer by variety ways. Modulating the tumor microenvironment prevents metastasis and eliminates cancer stem cells.[51] In order to provide a new era of Chinese medicine, Understanding their molecular basis and highlighting their potential applications is crucial of a proven group of traditional Chinese medicine for cancer treatment. By understanding these molecular mechanisms, we can anticipate a new era in Chinese medicine.[52] The traditional Chinese medicine (TCM) uses many herbal products that have chemopreventive properties. These regulate a wide range of molecular targets, including as cyclooxygenase-2 (COX-2), nuclear factor kappa B (NF-B), and nuclear factor erythroid 2 -related factor 2 (Nrf2)-mediated antioxidant signalling pathways, to block a variety of activities in cancer cell growth, invasion, and metastasis.

## Unani medicines for cancer

The ancient therapeutic practise known as unani medicine is practised all over the world. Unani medicines can be a substitute to modern chemotherapeutic agents. These can be used as a adjuvant in cancer treatment. The review provide evidence based analysis to Unani drugs having anti cancerous, activities in the treatment of cervical cancer. Additionally, this review article is focused on discussing how unorthodox medicines and other foods function as potentially harmful substances from a scientific and medical perspective.[53]

## CONCLUSION

The cancer treatment is advancing with respect to time. The future will decide the cancer treatment with more better therapeutic advantages. Novel targeted therapies are the major area of research to provide better therapy.[9] The nanotechnology also provides the enhanced permeability and retention effect to provide an excellent therapy for cancer.[54] A number of new therapies are being developed in the field of targeted therapy, such as antibodies, small molecules, anti-angiogenics, and viral therapies, Which opens the door for effective cancer therapy.[55]

## REFERENCES

1. F. Bray, J. Ferlay, I. Soerjomataram, R. L. Siegel, L. A. Torre, and A. Jemal, "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries," *CA. Cancer J. Clin.*, vol. 68, no. 6, pp. 394–424, 2018, doi: 10.3322/caac.21492.
2. C. Pucci, C. Martinelli, and G. Ciofani, "Innovative approaches for cancer treatment: Current perspectives and new challenges," *Ecancermedalscience*, vol. 13, pp. 1–26, 2019, doi: 10.3332/ecancer.2019.961.
3. "cancer key facts." <https://www.who.int/news-room/fact-sheets/detail/cancer> (accessed May 23, 2022).
4. V. Mathur, Y. Satrawala, M. S. Rajput, P. Kumar, P. Shrivastava, and A. Vishvkarma, "Solid lipid nanoparticles in cancer therapy.," *Int. J. Drug Deliv.*, vol. 2, no. 3, pp. 192–199, 2010, doi: 10.5138/ijdd.2010.0975.0215.02029.
5. "cancer." [https://www.indiancancersociety.org/cancer-information/?utm\\_source=adwords&utm\\_medium=search&utm\\_campaign](https://www.indiancancersociety.org/cancer-information/?utm_source=adwords&utm_medium=search&utm_campaign) (accessed May 24, 2022).
6. V. Vijaya, "Review article An overview of targeted cancer therapy," vol. 5, no. 4, pp. 1–6, 2015, doi: 10.7603/s40.
7. "chemotherapy." <https://www.mayoclinic.org/tests-procedures/chemotherapy/about/pac-20385033> (accessed May 23, 2022).
8. K. A. Amjad MT, Chidharla A, Cancer chemotherapy. StatPearls Publishing, 2022.
9. V. Schirmacher, "From chemotherapy to biological therapy : A review of novel concepts to reduce the side effects of systemic cancer treatment ( Review )," pp. 407–419, 2019, doi: 10.3892/ijo.2018.4661.
10. C. Moorthi, R. Manavalan, and K. Kathiresan, "Nanotherapeutics to overcome conventional cancer chemotherapy limitations," *J. Pharm. Pharm. Sci.*, vol. 14, no. 1, pp. 67–77, 2011, doi: 10.18433/j30c7d.
11. M. D. 1. Kumar LA, Pattnaik G, Satapathy BS, Swapna S, "Targeting to brain tumor: Nanocarrier-based drug delivery platforms, opportunities, and challenges.," *J. Pharm. Bioallied Sci.*, vol. 13, no. 02, p. 172.
12. D. S. 4. Kumar LA, Satapathy BS, Pattnaik G, Barik B, Patro CS, "Malignant brain tumor: Current progresses in diagnosis, treatment and future strategies.," *Ann. Rom. Soc. Cell Biol.*, vol. 25, no. 6, pp. 16922–32, 2021.
13. B. B. 3. Satapathy BS, Kumar LA, Pattnaik G, "Lomustine Incorporated Lipid Nanostructures Demonstrated Preferential Anticancer Properties in C6 Glioma Cell Lines with Enhanced Pharmacokinetic Profile in Mice.," *Acta Chim. Slov.*, vol. 68, no. 4, pp. 970–82, 2021.
14. "Hormone therapy." <https://www.cancer.org/treatment/treatments-and-side-effects/treatment-types/hormone-therapy.html> (accessed May 23, 2022).
15. "Immunotherapy." <https://www.cancerresearch.org/en-us/immunotherapy/what-is-immunotherapy> (accessed May 23, 2022).
16. "Radiation therapy." [https://www.radiologyinfo.org/en/info/intro\\_onco](https://www.radiologyinfo.org/en/info/intro_onco) (accessed May 23, 2022).
17. "cancer treatment." <https://www.mayoclinic.org/tests-procedures/cancer-treatment/about/pac-20393344> (accessed May 24, 2000).
18. "Surgery." <https://www.cancer.net/navigating-cancer-care/how-cancer-treated/surgery/what-cancer-surgery> (accessed May 24, 2022).
19. P. E. Huber et al., "A New Noninvasive Approach in Breast Cancer Therapy Using Magnetic Resonance Imaging-guided Focused Ultrasound Surgery 1," pp. 8441–8447, 2001.
20. P. Kumari, B. Ghosh, and S. Biswas, "Nanocarriers for cancer-targeted drug delivery," *J. Drug Target.*, vol. 24, no. 3, pp. 179–191, 2016, doi: 10.3109/1061186X.2015.1051049.
21. C. Sawyers, "<Targeted-cancer-therapy\_2004\_Nature.pdf>," *Nature*, vol. 432, pp. 294–297, 2004.
22. J. L. Arias, B. Clares, M. E. Morales, V. Gallardo, and M. A. Ruiz, "Lipid-Based Drug Delivery Systems for Cancer Treatment," *Curr. Drug Targets*, vol. 12, no. 8, pp. 1151–1165, 2011, doi: 10.2174/138945011795906570.
23. S. K. P. 8. Abhiram Rout, Manmayee Mohapatra, Ladi Alik Kumar, "Recent Trends In Nanoliposphere," *J. Pharm. Negat. Results*, 2022.
24. "stem cell transplant." <https://www.cancer.gov/about-cancer/treatment/types/stem-cell-transplant> (accessed May 24, 2022).
25. T. Delivery, "Nanoparticle-mediated hyperthermia in cancer therapy," pp. 1001–1014, 2011.
26. A.D. B. Vaidya, A. J. Amonkar, N. S. Bhatt, and P. M. Parikh, "Complementary and Alternative Medicine for Cancer Care in India: Basic and Clinical Perspective BT - Alternative and Complementary Therapies for Cancer: Integrative Approaches and Discovery of Conventional Drugs," M. Alaoui-Jamali, Ed. Boston, MA: Springer US, 2010, pp. 31–82.
27. G. S. Bokadia, "A systematic review on cancer therapy in ayurveda .," vol. 10, no. 1, p. 600077, 2018.
28. L. T. O. Editor, "Ayurveda and cancer," pp. 393–394, 2010, doi: 10.4103/0974-8490.75463.
29. E. Safarzadeh, S. S. Shotorbani, and B. Baradaran, "Herbal Medicine as Inducers of Apoptosis in Cancer Treatment," vol. 4, no. Suppl 1, pp.

- 421–427, 2014, doi: 10.5681/apb.2014.062.
30. S. Ahmad, T. Rehman, and W. M. Abbasi, “Homoeopathic approach for the treatment of cancer,” pp. 10–16, 2018, doi: 10.4103/ijrh.ijrh.
  31. A. Unlu, O. Kirca, and M. Ozdogan, “Homeopathy and cancer,” *J. Oncol. Sci.*, vol. 3, no. 2, pp. 77–80, 2017, doi: 10.1016/j.jons.2017.05.006.
  32. S. Kassab, M. Cummings, S. Berkovitz, R. van Haselen, and P. Fisher, “Homeopathic medicines for adverse effects of cancer treatments,” *Cochrane Database Syst. Rev.*, no. 2, 2009, doi: 10.1002/14651858.CD004845.pub2.
  33. M. Frass, K. Zhigalov, M. Oberbaum, and P. Weiermayer, “Homeopathy effects in patients during oncological treatment,” *J. Cancer Res. Clin. Oncol.*, vol. 148, no. 10, pp. 2943–2944, 2022, doi: 10.1007/s00432-022-04240-6.
  34. W. B. Jonas et al., “Can Homeopathic Treatment Slow Prostate Cancer Growth?,” *Integr. Cancer Ther.*, vol. 5, no. 4, pp. 343–349, Dec. 2006, doi: 10.1177/1534735406294225.
  35. P.-J. Lin et al., “Yoga for the Management of Cancer Treatment-Related Toxicities,” *Curr. Oncol. Rep.*, vol. 20, no. 1, p. 5, 2018, doi: 10.1007/s11912-018-0657-2.
  36. D. Cross and J. K. Burmester, “Gene Therapy for Cancer Treatment : Past , Present and Future,” vol. 4, no. 3, pp. 218–227, 2006.
  37. E. Alarco, “Strategies for Targeting Gene Therapy in Cancer Cells With Tumor-Specific Promoters,” vol. 10, no. December, pp. 1–18, 2020, doi: 10.3389/fonc.2020.605380.
  38. B. Sung, S. Prasad, V. R. Yadav, and B. B. Aggarwal, “Cancer Cell Signaling Pathways Targeted by Spice-Derived Nutraceuticals,” *Nutr. Cancer*, vol. 64, no. 2, pp. 173–197, Feb. 2012, doi: 10.1080/01635581.2012.630551.
  39. W. Ling, L. Y. Y. Lui, W. K. W. So, and K. Chan, “Effects of acupuncture and acupressure on cancer-related fatigue: a systematic review.,” in *Oncology Nursing Forum*, 2014, vol. 41, no. 6.
  40. A. Molassiotis, A. M. Helin, R. Dabbour, and S. Hummerston, “The effects of P6 acupressure in the prophylaxis of chemotherapy-related nausea and vomiting in breast cancer patients,” *Complement. Ther. Med.*, vol. 15, no. 1, pp. 3–12, 2007, doi: <https://doi.org/10.1016/j.ctim.2006.07.005>.
  41. Y. He et al., “Clinical Evidence for Association of Acupuncture and Acupressure With Improved Cancer Pain: A Systematic Review and Meta-Analysis,” *JAMA Oncol.*, vol. 6, no. 2, pp. 271–278, Feb. 2020, doi: 10.1001/jamaoncol.2019.5233.
  42. N. Samuels et al., “Feasibility of Homeopathic Treatment for Symptom Reduction in an Integrative Oncology Service,” *Integr. Cancer Ther.*, vol. 17, no. 2, pp. 486–492, Nov. 2017, doi: 10.1177/1534735417736133.
  43. N. M. Arring, D. L. Barton, T. Brooks, and S. M. Zick, “Integrative Therapies for Cancer-Related Fatigue.,” *Cancer J.*, vol. 25, no. 5, pp. 349–356, 2019, doi: 10.1097/PPO.0000000000000396.
  44. C. Maindet, A. Burnod, C. Minello, B. George, G. Allano, and A. Lemaire, “Strategies of complementary and integrative therapies in cancer-related pain—attaining exhaustive cancer pain management,” *Support. Care Cancer*, vol. 27, no. 8, pp. 3119–3132, 2019, doi: 10.1007/s00520-019-04829-7.
  45. K. I. Block, P. B. Block, and C. Gyllenhaal, “Integrative Therapies in Cancer: Modulating a Broad Spectrum of Targets for Cancer Management,” *Integr. Cancer Ther.*, vol. 14, no. 2, pp. 113–118, Jan. 2015, doi: 10.1177/1534735414567473.
  46. H. Greenlee et al., “Clinical Practice Guidelines on the Use of Integrative Therapies as Supportive Care in Patients Treated for Breast Cancer,” *JNCI Monogr.*, vol. 2014, no. 50, pp. 346–358, 2014, doi: 10.1093/jncimonographs/igu041.
  47. B. R. Cassileth, “Psychiatric benefits of integrative therapies in patients with cancer,” *Int. Rev. Psychiatry*, vol. 26, no. 1, pp. 114–127, 2014, doi: 10.3109/09540261.2013.838153.
  48. C. M. Kafer and J. A. Milner, “The role of herbs and spices in cancer prevention,” *J. Nutr. Biochem.*, vol. 19, no. 6, pp. 347–361, 2008, doi: <https://doi.org/10.1016/j.jnutbio.2007.11.003>.
  49. S.-A. N. Alternative, T. For, and C. Treatment, “World Journal of Pharmaceutical Research,” vol. 10, no. 8, pp. 1486–1497, 2021, doi: 10.20959/wjpr20218-20996.
  50. “Fenugreek, a Naturally Occurring Edible Spice, Kills MCF-7 Human Breast Cancer Cells via an Apoptotic Pathway,” *Asian Pacific J. Cancer Prev.*, vol. 12, no. 12, pp. 3299–3304, 2011.
  51. Y. Xiang, Z. Guo, P. Zhu, J. Chen, and Y. Huang, “Traditional Chinese medicine as a cancer treatment: Modern perspectives of ancient but advanced science,” *Cancer Med.*, vol. 8, no. 5, pp. 1958–1975, May 2019, doi: <https://doi.org/10.1002/cam4.2108>.
  52. H. S. Parekh, G. Liu, and M. Q. Wei, “A new dawn for the use of traditional Chinese medicine in cancer therapy,” vol. 8, pp. 1–8, 2009, doi: 10.1186/1476-4598-8-21.
  53. T. Fahad and I. Shameem, “An evidence based approach to the management of cervical cancer in unani system of medicine : A review,” vol. 7, no. 2, pp. 2536–2544, 2018.
  54. Y. Nakamura, A. Mochida, P. L. Choyke, and H. Kobayashi, “Nanodrug Delivery: Is the Enhanced Permeability and Retention Effect Sufficient for Curing Cancer?,” *Bioconjug. Chem.*, vol. 27, no. 10, pp. 2225–2238, 2016, doi: 10.1021/acs.bioconjchem.6b00437.
  55. A. Urruticoechea, R. Alemany, J. Balart, A. Villanueva, F. Viñals, and G. Capellá, “Recent Advances in Cancer Therapy : An Overview,” pp. 3–10, 2010.