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Cancer is a disorder in which cells in a particular area of the body multiply and develop uncontrolled. The malignant cells have the capacity to penetrate and damage nearby healthy tissue, including organs (Weinberg, 1996). In 2019, there were 23.6 million new instances of cancer each year and 10 million people die worldwide, suggesting rises of 26% and 21% over the previous ten years, respectively (Kocarnik et al., 2022; Sciacovelli et al., 2020). According to estimates, there will be 1.9 million new cancer diagnoses and 609,360 cancer related deaths are observed in the United States in the time of 2022 (Beger et al., 2008). The growth of cancer registries around the globe has sparked an interest in discovering novel drugs that seem to be toxic against cancer cells but harmless to healthy cells. The anticancer medications that were traditionally used were relatively toxic to both normal body cells and tumor cells in the area of the body where the cancer had first appeared. Right now, both terrestrial plants and marine environments are being used in the search for new anticancer medications (Greenwell and Rahman, 2015). For generations, people have employed plants to treat illnesses. Many plants are consumed around the world for their health advantages as a form of traditional folk remedies. A wide range of anticancer drugs derived from plant materials are purified, and then they are tested in clinical trials on cells (including several cancer cells lines) and experimental animals (Greenwell and Rahman, 2015). In very recent time, the number of recently discovered natural substances has increased dramatically. The use of plants as sources of highly biologically active materials has been around for centuries in traditional medicine (Fridlender et al., 2015). One way to obtain these substances is by extracting them from plant materials. An alternative approach is to use biotechnological tools to produce anticancer compounds derived from plants. Some of the naturally occurring substances found plants and aquatic animals that have antitumor properties include alkaloids, diterpenoquinone, diterpenes, purine-based compounds, peptides, l actonic sesquiterpene, cyclic depsipeptide, macrocyclic polyethers, proteins etc. (Lichota and Gwozdinski, 2018). Additionally, there is a lot of potential in marine environments to find novel organisms that can help with cancer treatment and prevention. Late in the 19th century, marine first appeared. After 1980, the field of biotechnology emerged as one that gave the study of the oceans direction, focusing on uses like drug development (Newman and Cragg, 2016). There is growing interest in utilizing the diversity and complexity of marine natural product scaffolds due to their tremendous potential for rational drug discovery (Nobili et al., 2009). New anticancer medications are required due to the rise in the prevalence of various types of cancer (Lichota and Gwozdinski, 2018). This study's objective was to identify compounds with anti-cancer properties that were derived from plant and marine sources. 2. Materials

and Methods A search was conducted (till May 2022) in the following databases: PubMed, Science Direct, MedLine, and Google Scholar using the keywords 'plant derivatives' and 'anticancer activity/effect'. There were no language restrictions. The articles were reviewed for information on plant derivatives, marine source, cancer patho-physiology, anticancer activities, test results, and potential mechanisms of action.

3. Results 3.1. Cancer Pathophysiology Cancer is well-known disease that are occurred by the regulation of tissue growth. A normal cell must change its genes to become a cancer cell, which regulates cell development and differentiation. Genetic alterations can take place at a variety of different scales, from the addition or deletion of whole chromosomes to a single DNA nucleotide mutation. These modifications have an impact on two large types of genes. Oncogenes can be either normal genes that are overexpressed or mutated genes that exhibit unique features. In either instance, the expression of these genes promotes cancer cell malignancy. Tumor suppressing genes are those that impede cancer cell division, survival, or other qualities. Tumor suppressing genes are frequently silenced by cancer-promoting genetic mutations (Cappell, 2008). The traditional understanding of cancer is that it is a collection of diseases caused by progressive genetic abnormalities such as tumor-suppressor gene mutations, oncogene mutations, and chromosomal abnormalities (Baylin and Ohm, 2006). Epigenetic alterations are those that affect the genome in a way that is relevant to function but do not alter the nucleotide sequence. Changes in DNA methylation (hypermethylation and hy-pomethylation), histone modification, and chromosomal layout are only a few examples of such modifications (arise through the negative protein expression like HMGA2 or HMGA1) (Baldassarre et al., 2003; Kanwal and Gupta, 2012). While epigenetic abnormalities are common in malignancies, epigenetic modifications in DNA repair genes, which result in lower production of DNA repair proteins, may be especially important. Such changes are expected to begin early in cancer growth and are a plausible cause of the genomic instability seen in malignancies (Bernstein et al., 2013).

3.2. Plant derived compounds Plant-derived compounds have shown to be a rich source of different types of novel medicinal molecules applied against several type of human disease. Many anticancer drugs have been isolated from plants, including Catharanthus roseus, Cuphea hyssopifolia, Podophyllum species, Coptis chinensis, Taxus brevifolia, Camptotheca acuminata, Betula alba, Streptococcus peucetius, Cephalotaxus species, Erythroxyllum pervillei, Evodiae fructus, Curcuma longa, Ipomoeca batatas, Centaurea schischkinii, , Eugenia jambos L., Alnus rubra, Punica granatum L, Phyllanthus niruri L., Hydrastis Canadensis, Sanguinaria canadensis, Stephania tertrandra and others. Scientists are still investigating the bioavailability of anti-cancer substances in heretofore unrecognized plant species.

Sources



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