

A CRITICAL REVIEW ON ANTICANCEROUS ACTIVITY OF INDIAN SPICES EXTRACT

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Article Received on
18 February 2024,

Revised on 09 March 2024,
Accepted on 29 March 2024

DOI: 10.20959/wjpr20247-31883



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ABSTRACT

Cancer is the second-leading cause of death in the world. One in three people in the Western world develop cancer and one in five die of the disease. Spices are the soul & body of Indian cuisine & without them, it's impossible to create the taste, aroma, or flavor of authentic food. Initially, spices were used to retain the freshness of the cooked food, then used as a preservative, later to add taste and flavor to dishes. India is one of the largest producers, exporters & consumers of spices. Spices rather play an important role in medicinal, cosmetic, pharmaceutical and perfumery, and many more. Spices also play a major role in curing diseases like, diabetes, cardiovascular diseases, arthritis, cancer and AIDS. In this review article compilation of various anticancer activity of Indian spices using modern scientific system. Indian spices found beneficial in various type of cancer such as Gastric, Ovarian, breast cancer etc.

KEYWORDS: Cancer, Indian spices, extracts, in vivo, in vitro.

INTRODUCTION

Cancer is a disease in which some of the body's cells grow uncontrollably and spread to other parts of the body. Cancer is a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020, or nearly one in six deaths. The most common cancers are breast,

lung, colon and rectum and prostate cancers. Around one-third of deaths from cancer are due to tobacco use, high body mass index, alcohol consumption, low fruit and vegetable intake, and lack of physical activity. Each year, approximately 400 000 children develop cancer. The most common cancers vary between countries.^[1] Spices had played a vital role in the lifestyle of people. Spices have been used for generations by humans as food and to treat ailments. There are several medicinal uses of spices in our daily life. Many spices are used in kitchen and have certain medicinal activity. Since ancient time and till today spices are used for many purposes medicinally.^[2] It has been widely used as condiments for thousands of years because of their flavor, taste and color. Several spices have been used as medicinal plants in folk medicine for the treatment of various diseases because they contain many bioactive compounds and possess a lot of beneficial health effects.^[3] The antioxidant, anti-inflammatory, and immunomodulatory effects of spices have been confirmed in many studies. Spices could be used to prevent and treat cancers, because oxidative stress, inflammatory stress and immune response have been associated with the genesis, growth, and metastasis of cancers.^[4] In fact, epidemiological and experimental evidences have shown that certain spices might lower risks of some cancers.

This review summarized some studies about different extracts of spices showing anti-cancer activity and prevention of cell growth.

MATERIALS AND METHODS

The data is collected and reviewed through various research papers/articles from databases PubMed, Google Scholar and research gate etc. All spices extracts and their anticancer actions have been compiled in tabular form.

List of some indian spices that act as anticancerous

S. No	Biological Source	Part Used	Type of cancer	Model	Extract	Ref
1	<i>Piper nigrum</i>	fruits	colorectal carcinoma	colorectal carcinoma cell lines	ethanolic extract	[5]
2	<i>Piper longam</i>	fruits	Dalton's lymphoma ascites (DLA) and Ehrlich ascites carcinoma (EAC)	Dalton's lymphoma ascites (DLA) cells and 250 microg/ml to Ehrlich ascites carcinoma (EAC) cells	alcoholic extract	[6]
3	<i>Acorus calamus</i>	rhizome	Gastric cancer	human gastric cancer cell line	ethanolic extract	[7]

				(AGS)		
4	<i>Cinnamomum tamala</i>	leaf	Ovarian cancer	human ovarian cancer cells	extract	[8]
5	<i>Coriandrum sativum</i>	root, leaf and stem	Breast cancer	breast cancer cells	extract	[9]
6	<i>Nigella sativa</i>	seeds	Breast cancer, colon cancer	Fischer 344 rats	extract	[10]
7	<i>Capsicum Annuum</i>	seeds	Several types of human cancers,	Nano-Liposomes Model	extract	[11]
8	<i>Elettaria cardamomum</i>	fruit	Head and Neck Squamous Cell Carcinoma.	Hep-2 cell line	extract	[12]
9	<i>Syzygium aromaticum</i> L.	buds	Breast carcinoma	Sprague-Dawley female rats and The human cancer cell line MCF-7	ethyl acetate extract	[13]
10	<i>Zingiber officinale</i>	Rhizome	Pancreatic Cancer Cells	Pancreatic Cancer Cells	ethanolic extract	[14]
11	<i>Anethum graveolens</i>	seeds	Human breast (MCF-7), lung (A-549), and cervical (HeLa) carcinoma	MCF-7, A-549, and HeLa cell lines	methanol extract	[15]
12	<i>Allium sativum</i>	Garlic bulb	Colon cancer	Colo 320 DM colon cancer cells.	Ethanolic extract	[16]
13	<i>Curcuma longa</i>	Rhizome	Breast cancer	Breast cancer and Vero cell lines	ethanolic extract	[17]
14	<i>Cinnamomum zeylanicum</i>	Bark	Hepato carcinoma	Hepato carcinoma cell lines	methanolic extract	[18]
15	<i>Murraya koenigi</i>	Leaf	Breast cancer	Breast cancer cell line	methanolic extract	[19]
16	<i>Crocus sativus</i>	Saffron	Lung tumor	HeLa cells, malignant and non-malignant cells	Extract of saffron	[20]

CONCLUSION

Due to prevalence of cancer among wide range of population, it is necessary to develop safe and effective treatment. From the above data, we conclude that phytochemicals found in spices play an important role to inhibit cancer growth & also helps in prevention of cancer. We can use this traditional medicine for the betterment of the health care system. The present review elaborates various therapeutic and innovative approaches to find out the perspective on globalization of safe and cost-effective Herbal treatment for cancer.

ACKNOWLEDGMENTS

Not applicable.

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