International Journal of Multidisciplinary Research and Development

International Journal of Multidisciplinary Research and Development

Volume :2, Issue :4, 414-415
April 2015
www.allsubjectjournal.com
e-ISSN: 2349-4182
p-ISSN: 2349-5979
Impact Factor: 3.762

Jayant Arora
Amity Institute of Biotechnology, Amity University, Noida Sector-125, Uttar Pradesh, India

Shalika Nigam
Amity Institute of Biotechnology, Amity University, Noida Sector-125, Uttar Pradesh, India

Anaida Sanjiv Walia
Amity Institute of Biotechnology, Amity University, Noida Sector-125, Uttar Pradesh, India

Correspondence:
Jayant Arora
Amity Institute of Biotechnology, Amity University, Noida Sector-125, Uttar Pradesh, India

Role of Turmeric in liver and colon cancer

Jayant Arora, Shalika Nigam, Anaida Sanjiv Walia

Abstract
The abnormal and unlimited differentiation of cells leads to a deadly disease known as cancer. Everyone is so familiar with word cancer because each one of us will explore cancer patient in their family. This disease has trapped every organ and every cell of body. There are more than 100 types of cancer from head to foot. Currently researchers are still exploring different pathways and understanding protein metabolism involved in cancer cell proliferation which is a vast study. So there is a long way until we find the exact and feasible treatment which can be afforded by all the people. This article deals with the basic fundamentals of studying traditional medicine ; turmeric in controlling cancer.

Keywords: Turmeric, liver, colon cancer

1. Introduction

Overview of Turmeric

Turmeric is known as "holy powder" in India which helps in detoxifying the bad compounds and increases the secretion of bile juice. It helps the body in maintaining the body balance and blood circulation (1). Turmeric is a golden addition in your diet. Turmeric had been in spotlight for in treating diseases associated with oxidative stress example cancer, diabetes etc. Despite the advances in technology, there is no decrease in disease complications caused by oxidative stress which is becoming one of the major issues for doctors (2). Curcumin is an active ingredient extracted from turmeric which is an incredible antioxidant which had been proved to be beneficial in controlling diseases related to oxidative stress. It's a polyphenol which displays antioxidant activity and is responsible for mechanism of treating diseases.

Effect of Curcumin on liver cancer

Curcumin is a powerful antioxidant and anticancer agent used in treating various type of cancer like liver, skin cancer, drug resistant cancer, head and neck cancer etc. The research on curcumin as anticancer agent is being constantly published in international journals and most of the research highlights the positive impact of using curcumin as an anticancer agent. A recent study shows that curcumin activates the apoptosis activity of cancer cells i.e. killing of liver cancer cells (3). In one of the research published in Journal of medical association of Thailand stated that extract of turmeric was able to regenerate and repair liver tissues in diabetic rats. Curcumin ingestion is safe in infants too and has also showed remarkable results as anticancer agent. There were 26 preclinical studies and one of them was a 6 month old infant having liver cancer. The kid was treated successfully with 6 more year of life in his account (4).

In early 2012, a review was published on the role of curcumin in liver cancer. In the process of finding a suitable alternative other than chemotherapy, curcumin the primary active ingredient of turmeric have shown remarkable results against cancer cells. Review suggests that curcumin may have antitumor, antioxidant, and anti-inflammatory properties. It also suggests that the in vitro and in vivo studies have shown promising results which involves molecular signalling pathways (5).

A 15 weeks old diabetic mice liver was experimented with curcumin in their diet for 8 weeks. To interpret the results nitrosative stress was calculated. During this phase there was increase in the expression of AMPK and PPARγ, and diminished NF-κB protein. Hence it was concluded that it regulates in positive manner and to observe more beneficial results, curcumin role had to be administered in early stage (6). To get the best results from curcumin, some research groups are making analogues which are similar to primary structure but have one or more additional properties which enhances its effect on cancer cells. An in

vitro study was done of curcumin analogue (UBS109) on liver. In addition to reducing the size of tumour it was quickly metabolized in vitro.

Cis-Diammineplatinum (II) dichloride (cisplatin) is used as anti cancer agent against many cancers along with liver cancer. Recent studies say that it can produce unwanted side effects while treating liver tissues. Cisplatin induces the free radicals and leads to oxidative which is subsequently helping in progression of various types of cancer. To manage this problem some research groups are studying the role curcumin in reducing the oxidative stress. While experimenting they found out that Pre-treatment with curcumin and tocopherol helps in improving liver metabolism like liver enzymes, lipid peroxidation bio marker and gene expression of NADPH oxidase which overall helped in better functioning of cisplatin and reducing the side effects (7). According to ayurvedic and traditional Chinese medicine, turmeric has extraordinary results on digestive system and liver. Old medical practitioner believes that they shrink hepatic ducts, which helps in treating liver problems such as hepatitis, cirrhosis, and jaundice. The study conducted by GLOBOCAN on worldwide liver cancer or death sentence says that people living in developed nations like USA has 1 in 300 chance of developing liver cancer whereas in developing world where people consume curcumin as a flavouring agent in their curries have rare 1 in 1200 chance of developing this cancer (8).

Turmeric for colon cancer

A study was conducted with 15 patients of colorectal cancer to find out the best concentration of curcumin which can be absorbed by blood. Scientist explored that most of the patients could take 3.6 gram of curcumin without any ill effects. There was some evidence of curcumin in blood but lower than this dose will affect the stomach and intestine only. It is advised to take large amount of curcumin in small doses rather than taking it one time (9). Researchers are still looking for exact pathway of curcumin to inhibit cancer cell growth. In one more study half of the sample population was given 2 grams of curcumin whereas other half was gram of curcumin for one month. After one month the biopsy of colon was conducted to see if there are any changes in cancer cell growth. Population taking 4 gram curcumin had lower abnormal crypt foci than the population taking 2 gram.

Study done in Linus Pauling Institute, Oregon State University for phase 1 clinical trials of colorectal cancer has been successful. Patients were given oral supplementation and they have been approved for further evaluation. Further evaluation will involve studying the efficacy and safety of curcumin levels (10). Research study conducted the scientists used three types of colon cancer cells p53 (+/+), p53 (-/-) HCT-116, and p53 HT-29. Study results proposed that it may have high potential to inhibit the colon cancer cell growth. During experimentation curcumin was modulating the colon cancer cells by adding a phosphate group to it which totally changes the functioning and metabolism of enzymes (11).

Conclusion

Turmeric is an Indian golden spice comes under ginger family. It has been in use for hundreds of decade by southern eastern countries as a tool for cooking and medical practice. The major product extracted from turmeric is curcumin has properties like antioxidant and anti cancerous and is majorly obtained from the roots of curcuma longa plant and is native to India There have been promising and extraordinary results of curcumin on inhibiting and killing the both primary and secondary liver cancer cells. Also it had been successful in treating colon cancer as it is absorbed easily in intestines. Turmeric has huge potential of fighting the deadly diseases. It`s still an unproven treatment on humans but some research groups have shown positive evidence of anticancer activities.

References

1. http://www.everygreenherb.com/turmeric.html
2. http://www.livestrong.com/article/442134-how-does-turmeric-damage-the-liver/
3. http://www.naturalnews.com/041995_turmeric_anti-cancer_agent_liver_health.html
4. http://www.greenmedinfo.com/blog/why-turmeric-may-be-diseased-livers-best-friend-friend-a
5. Darvesh AS, Aggarwal BB, Bishayee A, Curcumin and liver cancer: a review, Current Pharmaceutical Biotechnology, 2012, 13:218-28.
6. Jiménez-Flores LM, López-Briones S, Macías-Cervantes MH, Ramírez-Emiliano J, Pérez-Vázquez V, A PPARγ, NF-κB and AMPK-dependent mechanism may be involved in the beneficial effects of curcumin in the diabetic db/db mice liver, Molecules, 2014, 19: 8289-302.
7. Palipoch S, Punsawad C, Koomhin P, Suwannalert P, Hepatoprotective effect of curcumin and alpha-tocopherol against cisplatin-induced oxidative stress, BMC complementary and Alternative medicine, 2014, 14:111
8. http://turmericsgold.com/cancer/curcumin-for-liver-cancer/
9. http://www.herballegacy.com/Alter_Dosages.html
10. http://lpi.oregonstate.edu/infocenter/phytochemicals/curcumin/
11. http://www.naturalnews.com/043031_curcumin_colon_cancer_apoptosis.html