GALGOTIAS UNIVERSITY

PROJECT ON

HERBAL DRUGS: THERE USE IN ANTICANER TREATMENT

IN

BACHELOR OF PHARMACY

Submitted By

PRABAL CHAUHAN
BACHELOR OF PHARMACY FINAL YEAR
Admission no 17SMAS102007

BRANCH OF PHARMACY

GALGOTIAS UNIVERSITY

SCHOOL OF MEDICAL ALLIED SCIENCE

Under the Supervision of

MS. SWATI VERMA
Assistant Professor

MAY 2021

TABLE OF CONTENT

DEPARTMENT OF PHARMACY

GALGOTIAS UNIVERSITY, GREATER NOIDA, G.B. NAGAR (U.P)

DEPARTMENT OF PHARMACY

CERTIFICATE

This is to certify that the work contained in this project on legand based drug design and drug discovery submitted in partial fulfilment for the academic requirement in the degree of Bachelor of Pharmacy is the original work carries out by **PRABAL CHAUHAN** during the academic year 2020–21, under the guidence of **Ms. SWATI VERMA(Assistant Professor) the work is completed and the ready for evaluation in partial fulfilment for the award of bachelor of pharmacy under galgotias university greater noida during the academic year 2020-21.**

Date :

Place:

Prof. PRAMOD KUMAR SHARMA

DEAN SCHOOL OF MEDICAL

AND

ALLIED SCIENCE

GALGOTIAS UNIVERSITY

DEPARTMENT OF PHARMACY

DECLARATION

The project report **HERBEL DRUGS: THERE USE IN ANTICANER TREATMENT** entitled is the compilation work of **Mr. PRABAL CHAUHAN** under supervision of **MS. SWATI VERMA** Assistant Professor **Department of Pharmacy, GALGOTIAS UNIVERSITY Greater Noida U.P India**. All pictures, Figures and information used in project are taken from various sources are true and best of my knowledge.

Name and signature of candidate

(PRABAL CHAUHAN)

ENROLLMENT No.1712102056

DEDICATION

I dedicate this to my guider teacher MS. SWATI VERMA (Assistant professor) who taught me everything about this project and taught me the basics rules of life that are very useful and important for a person to live a healthy life. Mam taught that never too late to start a thing and achieve your goals. Mam you and your thoughts really motivates me in my life and my carrier so mam thank you for guiding me.

Acknowledgement

I Would like to express my special thanks of gratitude to my project guide **MS. SWATI VERMA** as well as our Dean **MR. PRAMOD KUMAR SHARMA** who gave me the golden opportunity to do this wonderful project on the topic **HERBAL MEDICINE: AND THEIR USE IN ANTI-CANCER TREATMRNT** , which also helped me in doing a lot of research and I come to know about so many new things.

I new really thankful them.

Secondly I would also like a thank my friends who helped me a lot in finishing this project within the limited It helped me increase my knowledge and skills.

PRABAL CHAUHAN

HERBEL DRUGS: THERE USE IN ANTICANER TREATMENT

Prabal Chauhan*

ABSTRACT

Malignant growth is a sickness that inconveniently affects the overall population. Medication to treat and forestall malignancy is critically required. The interest in science and examination is zeroing in on normal drugs, which are thought to have less results than current treatments like chemotherapy. Optional metabolites created by the plant realm are being read for their enemy of malignancy properties, which could add to the creation of new remedial medications. With the accomplishment of the malignancy battling intensifies that have been delivered. In this day and age, new advancements are being created to upgrade disease care. Nanoparticles in nanomedicine, for example, are being used to improve the anticancer activity of herbal drugs found in plants by monitoring compound release and testing new administration methods.

INTRODUCTION

Plants have been utilized as medication since the beginning of humankind. Around 60% of against malignant growth drugs come from plants, for example, Taxol from Taxus brevifolia, Campothea camptothecin acuminata, and others. Disease care is notable to be outdated, and new treatments to forestall and fix malignant growth are urgently required. Home grown drugs are additionally a reasonable choice for malignant growth care in the present circumstance [1].

Therapeutic plants keep on assuming a significant part in worldwide medical care. Plants' restorative and monetary advantages are getting all the more broadly perceived and filled in both created and non-industrial nations. Vegetables (otherwise called botanicals) are portions of plants that are utilized for their scent, taste, and additionally properties. Herbal prescriptions, botanicals, and phytomedicines are items produced using botanicals that are utilized to improve wellbeing..

The utilization of spices as medication to treat ailment began with the utilization of "unrefined meds of vegetable source utilized for the counteraction of illness, including constant infection, or to protect great health." It is assessed that these natural medications can make up around 25% of the present pharmacopeia. Home grown medications normally separated from the plant with no modern preparing. Inside nearby or territorial operations, they are utilized to treat disease. Barely any results and limited treatment decisions for extreme sickness, general drug dissatisfaction or absence of customary therapies, certain results or dangers related with regular medication, faith in home grown items and the world being better or more secure, the capacity to pick individual cooperation in dynamic, just as social or otherworldly inclinations Allopathic meds have a wide scope of results, from gentle to genuine, and there are a great deal of them. A sleeping disorder, retching, weariness, dry mouth, the runs, stoppage, tipsiness, self-destructive reasoning, antagonism, gloom, crabbiness, rash, extreme lethargies, frailty, going bald, glucose, shoplifting, aggravation, shortcoming, alarm, disarray, blacking out, and passing are on the whole side effects that may happen. Grown-ups likewise battle to monitor various remedies, which builds the danger of allopathic medication results. [2]

These days, more basic disease therapy draws near, like chemotherapy, radiation, or medical procedure, might be fruitful, yet they accompany some straightforward results. Chemotherapy has extreme cellular side effect and can harm solid cells. Radiation treatment is a specific therapy. At the point when the tumor is notable and not encompassed by sensitive tissue, for example, cerebrum tissue, medical procedure is sucessful. The tissues encompassing the malignancy cells are annihilated by the warmth of hyperthermia. Nanoparticles can tie to explicit malignancy cells and light-touchy cells during nanotechnology [3]. Herbal cures incorporate flavors, regular substances and merchandise, plants or plant mixes that have been utilized for over 1,000 years before current meds were found. Herbal drugs have been ignored since the industrial revolution and the appearance of current herbal cures [4]. The utilization of present day techniques, then again, has killed the obstructions to common medication, and there is currently a ton of interest in normal fixings in the drug business [5,6]. As indicated by the WHO, home grown meds are utilized by 80% of the populace. Somewhere in the range of 1984 and 1994, 60% of the meds endorsed by the (FAO) were produced using plants, particularly spices. A lot of the 121 malignancy drugs are gotten from restorative plants. As indicated by an investigation, 48 new medications were created from regular items somewhere in the range of 1981 and 2002, including vinca alkaloid (vincristine-vinblastine vindesine-vinorelbine), taxanes compounds (paclitaxel-docetaxel), podophyllotoxin and its subordinates (topotecan-irinotecan), and antracyclines compounds(doxorubicin-daunorubicin-epirubicin-idarubicin [7,8].

S.No	Metabolites	Extracted drugs
1.	Vinca	Vincristine

2.	Vinca	Vinblastine
3.	Vinca	Vindesine
4.	Vinca	Vinorelbine
5.	Taxan	Paclitaxel
6.	Taxan	Docetaxel
7.	Podophylotoxin	Topotechan
8.	Podophylotoxin	Irinotechan
9.	Anthracyclines	Doxorubicin
10.	Anthracyclines	Daunorubicin
11.	Anthracyclines	Idarubicin
12.	Anthracyclines	Epirubicin

TABEL1: NATURAL DRUGS USED IN CANCER TREATMENT

HERBAL DRUG AND THEIR MECHANISM OF ACTION

1.VINCA ALKALOIDS :- Lymphoma, Hodgkins sickness, and leukemia are totally treated with vincristine and vinblastine.These drugs work basically on the M advance of the disease cell cycle and forestall the arrangement of the mitotic axle by forestalling the gathering of tubulin dimers into microtubules.

2.TAXANES :- The medications Docetaxel and Paclitaxel work by meddling with the mitotic shaft. They keep away from the dismantling of microtubules into tubulin monomers..

3.PODOPHYLOTOXIN:- Toptechan works by forestalling topoisomerase II from working. This medicine is best in the late S and early G2 stages.

Current malignancy treatment through phytochemicals: a novel methodology

Restorative plants are a blessing from nature to people, helping them as they continued looking for better wellbeing. Plants and their bioactive mixtures have been utilized in conventional medication since forever ago. Phytochemicals found in numerous therapeutic plant species forestall the development and advancement of disease. As per science, the plant realm contains around 250 000 plant species, of which just about 10% have been inspected for the treatment of different sicknesses. Phytochemicals and their analogs can be found in an assortment of plant parts, including the yield, blossom marks of disgrace, pericarp, sprouts, natural products, seeds, roots, rhizomes, stem, leaf, undeveloped organism, and bark, and play out an assortment of pharmacological capacities. Alkaloids, flavonoids, lignans, saponins, terpenes, taxanes, nutrients, minerals, glycosides, gums, oils, biomolecules, and other essential and auxiliary metabolites all assume significant parts in malignancy cell enacting proteins, chemicals, and flagging pathways [Cdc2, CDK2 and CDK4 kinases, topoisomerase compound, cycloxigenase and COX-2 (Cycloxigenase), Bcl-2, cytokines, PI3K, Akt, MAPK/ERK, MMP, TNK, robotic objective of rapamycin (mTOR) or by actuating DNA fix system (p21, p27, p51, p53 qualities and their protein items), Bax, Bid, Bak proteins, animating the development of defensive catalysts (Caspase-3, 7, 8, 9, 10, 12), prompting cancer prevention agent activity (cell reinforcement proteins) for example GSH, GST and GPxn), hence showing solid anticancer impacts as far as their adequacy on the previously mentioned proteins, catalysts and flagging pathways. Nitty gritty data on these restorative plants, including their family, parts utilized, and anticancer phytochemicals, just as their method of activity against explicit malignancies. The summed up model of carcinogenesis, the body's enemy of malignant growth framework, and common phytochemicals as hostile to disease specialists are additionally talked about. The ISI web of data was utilized to do a deliberate investigation of writing from 2010 to 2017.

Vinca alkaloids

Vinca alkaloids (VA) are an assorted gathering of phytochemicals separated from Catharanthus roseus (C. roseus) (Apocynaceae) that are utilized to treat an assortment of tumors, including bosom, liver, leukemia, testicular malignancy, and cellular breakdown in the lungs. Vinorelbine, vindesine, vincristine, and vinblastine are the four significant VAs utilized. Vinca alkaloids (vincristine and vinblastine) tie to a specific site on tubulin heterodimers (vinca-restricting site), upsetting microtubule capacities or halting the cell cycle at metaphase. Vinorelbine, vindesine, vinfosiltine, and vinovelbine are semisynthetic subsidiaries of vinca alkaloids that have as of late been acquainted with the market. These subordinates are utilized in the therapy of a wide scope of malignancies, either alone or related

to different phytochemicals. As indicated by a logical paper, almost 64 C. roseus cultivars were evaluated for vinca alkaloids, with Cooler Rose Hot having the most noteworthy measure of serpentine alkaloids. Endophytic organisms refined and disengaged from C. roseus have as of late been found as an option in contrast to C. roseus.

Taxanes

Taxanes are anticancer specialists that work by restricting to microtubules and assume a significant part in cell division. As far as viability on different sub-atomic targets, original taxanes (e.g., docetaxel and paclitaxel) are successful anticancer specialists. Paclitaxel (taxol) was first detached from the bark and leaves of Taxus baccata (T. baccata) and Taxus baccata (T. baccata) plants. canadensis, Corylus avellana, is a plant that is utilized to treat diseases like ovarian, bosom, and cellular breakdown in the lungs. Paclitaxel ties to b-tubulin in the lumen of microtubules, making microtubule elements delayed down and the cell cycle to enter the M interaction, while docetaxel, a semi-engineered subsidiary of T. baccata, is chiefly utilized in the therapy of bosom, pancreas, prostate, and cellular breakdowns in the lungs. Taxanes work basically by causing microtubule adjustment, apoptotic cell demise, and mitotic capture. Larotaxel, milataxel, ortataxel, and tesetaxel are a portion of the paclitaxel analogs at present in clinical preliminaries. For urethral bladder, pancreatic, lung, and bosom malignant growth, larotaxel is utilized alone or in blend with different medicines. Besides, out of 2 069 malignancy clinical preliminaries detailed by the National Cancer Institute as of July 2004, 248 are taxane-determined items, including 134 with paclitaxel, 105 with docetaxel and 10 with different taxanes are utilized either alone or along with other anticancer specialists.

Campothecin derivatives

Another class of plant-determined clinically-dynamic chemotherapeutic specialists, campothecin (a group of topoisomerase I harms), has a decent anticancer potential by hindering topoisomerase I in a wide scope of tumors. Out of 1 000 diverse plant removes evaluated for anticancer action, the disconnect of Camptotheca acuminata was the one in particular that showed viability, and the dynamic constituent secluded was known as camptothecin. A few exploration associations are leading broad examination for compelling camptothecin subordinates like topotecan (hycamtin) and irinotecan, with irinotecan being utilized to treat colorectal malignancy and topotecan being utilized to treat ovarian and cellular breakdown in the lungs, individually..

Cephalotaxus

Cephalotaxus alkaloids are a class of phytochemicals that have been utilized to treat an assortment of malignancy cell lines, including A-549 cellular breakdown in the lungs, HeLa, and SGC-7901 gastric disease cell lines. They work by hindering protein combination and zeroing in on explicit atomic occasions in protein blend, like inception of protein union, arrival of incipient peptides, and polyribosome debasement, however they have no impact on peptide chain prolongation. Cephalotaxus harringtonine alkaloids and isoharringtonine are anticancer specialists disengaged from Cephalotaxus harringtonia. Homoharringtonine, an anticancer specialist, has been concentrated to treat an assortment of malignant growths, including ongoing and intense myelogenous leukemia. What's more, the FDA has endorsed homoharringtonine for the therapy of ongoing myelogenous leukemia in various nations all throughout the planet, including China, Japan, Pakistan, the United States, and Germany..

Colchicine

Colchicine is a characteristic bioactive compound confined from the Colchicum autumnale (Colchicaceae) plant that has been read for the treatment of an assortment of sicknesses including precious stone joint pain, cirrhosis, and gout. It ties to tubulin in a perpetual way, settles microtubule development, stops the cell cycle at different stages, and actuates apoptosisUnfortunately, colchicine's activity isn't exact, and it captures the cell pattern of quickly partitioning ordinary cells. Thus, less harmful semisynthetic subsidiaries of colchicine (colchicinamide, deacetylcolchicine) have been created and are utilized to treat various malignancies, including colorectal (HCT-116), persistent

granulocytic leukemia, melanoma, and focal sensory system and bosom tumors. On account of its poisonousness, colchicine isn't suggested for the therapy of disease. Gloriosa superba has been distinguished as a basic wellspring of colchicine in tropical zones as of late.

Ellipticine

Ellipticine (topoisomeraseIIinhibitor) and elliptine (presently isoreserpiline) are anticancer mixtures found in the stem, bark, leaf, and base of Bleekeria vitensis and Ochrosia elliptica, individually. Aspidosperma, Ochrosia, and some Apocynaceae species contain these alkaloids. Topoisomerase II hindrance and intercalation with DNA to forestall expansion is believed to be the main DNA-harming systems of ellipticine. Ellipticine and its subsidiaries, for example, N-2-(diethylaminoethyl)– 9–hydroxyellipticinium chloride and 2-N-methyl 9-hydroxyellipticine, are intense anticancer specialists that have been utilized to treat ependymoblastoma, leukemia, myeloma, melanoma, bosom, and colon malignancy. In human lung and colon disease, elipticine restrains the phosphorylation of the p53 protein just as the CDK2 kinase. In France, a subordinate of ellipticine (elliptinium) is being tried in clinical preliminaries to see whether it has anticancer properties against bosom disease.

Flavones/Flavonoids

Flavonoids are plant-explicit optional metabolites present in various food varieties, including natural products, grains, tea, vegetables, and soybeans, and assume a huge part in disease care. In oral injuries, genetic adenomatous polyposis, and esophageal dysplastic sores, the counter disease capacity of freeze-dried anthocyanin-rich berries has been inspected. Flavopiridol is a plant-inferred semisynthetic flavone that restrains cyclin-subordinate kinase and has anticancer properties in both esophageal and gastric malignancies. Meta-investigations have principally centered around the elements of dietary flavonoids in the therapy of bosom, lung, stomach, and colorectal disease, for example, hindrance of DNA topoisomerase I and cycloxigenase.

Endemic anti- carcinogenic plants

For many years, plant material has been utilized to treat dangerous sickness. The seclusion of hostile to disease compounds came from phytochemical examination of plants that have a long history of utilization in the therapy of malignant growth in mainstream society. The National Cancer Institute (NCI) in the United States of America has been leading complete exploration on plants, microorganisms, and marine creatures since late 1950, starting with a screening of the underlying application. The program was predictable as its continued looking for new mixtures that could be found in both the creature and plant realms. Phytochemicals in soybeans, for example, genistein, help to forestall prostate disease [9]. Ordinary admission of leafy foods, because of phytochemical intensifies got from them, has been appeared to repress the activity of cell reinforcements and free extremists, bringing about enemy of disease impacts [10]. Methanol got from local plants Dendrosicyos socotrana, Withania aduensis, Withania riebeckii, Dracena cinnabari (winged serpent's blood tree) utilized as against disease mixtures, and Buxus hildebrandlii showed cytotoxic impact on tumor cells in Yemeni custom screening [11]. Khaya senegalensis metabolites have been appeared to have anticancer properties [12,13]. Mixtures got from Shvagandha leaves have hostile to disease properties and might be utilized as an anticancer medication [14]. The product of Vaccinium stamineum has hostile to malignancy and against leukemia properties [15]. Bosom, colon, prostate, and cellular breakdowns in the lungs are completely treated with metabolites gotten from Vaccinia macrocarpon or blueberries [16]. Morinda citrifolia, otherwise called berry In both clinical and lab settings, Hindi has anticancer impacts [17]. Biorhythms sensitivum alcoholic concentrate has hostile to disease movement in Dalton ascites lymphoma cells-instigated malignancy development and forestalls the life expectancy of mice with harmful tumors where Ehrlich ascites cells increment [18]. Hostile to disease prescriptions can be utilized in grains and organic products [19]. The counter malignancy impact of sap separated from Baladhuri plants local to India by eliminating oxidative responses [21]. Anticancer movement has been found in separates from two Iranian species, Linum persicum and Euphorbia cheradania [22]. On bosom malignant growth cells, pomegranate remove has an enemy of disease impact [23]. Brassinosteroids have a great deal of guarantee as hostile to malignant growth drugs since they contain steroid chemicals [24]. Careya arborea metabolites got from skin diminished malignancy brought about by DLA cells by a huge sum [25]. In mice, metabolites got from Tradescantia stem bark had an anticancer impact [26]. Twelve plant species local to China that incorporate Anemarrbena asphodeloides, Artemisia argyi or Chinese Artemisia, Commiphora myrrh, Duchesnea indica, Gleditsia sinessis, Ligustrum lucidum, Rheumpalmatum, Rubia cordifolia, Salvia chinesis, Scutellaria barbata, Uncaria rhichopilla, Vaccaria segetails have anticancer impact [28]. The hypericum family's phytochemical compounds can battle malignancy [29]. Sarris cernuss has been appeared to

have hostile to malignancy properties in the colon and bosom [30]. Ginger is a plant from the ginger family that is utilized as a flavor in food varieties and beverages everywhere on the world. Valenoides including 6-zhyngerol and 6-paradol are thought to have hostile to malignancy properties in fiery ginger [31]. Hostile to malignancy properties have been found in methanol intensifies got from five Iranian plants. Galium bug, Ferula angulate, Stachys obtuscrena, Echinophora cinera, and Circicum bracteosum are among these plants [32]. The ginseng plant has for some time been utilized for therapeutic purposes, and there is as of now a great deal of interest in separating hostile to malignant growth metabolites from it. [33.] Fungi-inferred bioactive mixtures can ensure against disease [34]. Saponins got from Chinese clematis have been appeared to have against malignancy properties in mice tumors [35]. Embelin compounds including 1,4-benzoquinone subordinate 5-0 ethyl embelin(1) and 5-0 methyl embelin(1) are promising antimitotic and against malignant growth particles [36]. Sesquiterpenes are a class of normally happening 15-carbon isoprenoid intensifies that are ordinarily found in plants and marine life. They have remedial potential for easing back malignancy advancement [37]. Platycodon has been appeared to have hostile to malignant growth properties[38]. Dillenia pentagons methanol extricate appears to have anticancer impacts against Dalton lymphoma [39]. Limonium vulgare, Artemisia maritima, and Salicornia europaea have all been appeared to have against malignant growth properties. Ononis spinosa, Trifolium fragiferum, and Trifolium repen removes were found to hinder tumor development [40]. Methanol separated from the leaf twig concentrate of Ledum groelandicum retzius (Labrador tea) exhibited anticancer movement [41]. Guduchi (Tinospora cordifolia) has been appeared to have hostile to neoplastic action against Ehrlich ascities carcinoma[42].

CONCLUSION

In both developed and non-industrial nations, disease is the main source of death. Chemotherapy and radiation treatment have an assortment of results, requiring the formation of another malignancy therapy strategy. Optional metabolites discovered in plants have been demonstrated to be powerful in treating an assortment of infections. Anticancer specialists got from plants have been a critical factor in the creation of new prescriptions. Subsequently, therapeutic plants and their concentrates can be thought to be defensive against various kinds of malignancy. Home grown therapies, which are cheap, can be recommended to country and weak individuals to effectively treat disease. The journey for anticancer action in restorative plants leaves a lot of space for the creation of incredible anticancer specialists.

REFRENCES

1. Verma M, Singh SK, Bhushan S, SharmaVK, DattP, et al., (2008) In vitro cytotoxic potential of Polyalthia longifolia on human cancer cell lines and induction of apoptosis through mitochondrial-dependent pathway in HL-60 cells. Chem Biol Interact. 171(1): 45-56.

2. Sri PU, Sree NV, Revathi S, Kumar YUVA and Sri ND: Role of herbal medicines in cancer, Int. J. Pharm. Sci. Res 2010; 1(11): 7-21

3.Safarzadeh E, Sandoghchian S, Baradaran B (2014) Herbal medicine as inducers of apoptosis in cancer treatment. Adv Pharm Bull 4: 421-427

4. Pal SK, Shukla Y (2003) Herbal medicine: current status and the future. Asian Pac J Cancer Prev 4: 281-288.

5.Koehn FE, Carter GT (2005) He evolving role of natural products in drug discovery. Nat Rev Drug Discov 4: 206-220

6. Saklani A, Kutty SK (2008) Plant-derived compounds in clinical trials. Drug Discov Today 13: 161-171.

7. Wang Z, Wang N, Chen J, Shen J (2012) Emerging glycolysis targeting and drug discovery from chinese medicine in cancer therapy. Evid Based Complement Alternat Med.

8. Mukherjee AK, Basu S, Sarkar N, Ghosh AC (2001) Advances in cancer therapy with plant based natural products. Curr Med Chem 8: 1467-1486

9. Ravindranath MH, Muthugounder S, Presser N, Viswanathan S (2004) Anticancer therapeutic potential of Soy LsoflDvone genistein. In Complementary and Alternative Approaches to Biomedicine, Springer, US, pp: 121-165.

10. Liu RH (2004) Potential synergy of Phytochemicals in cancer prevention, mechanism of action. J Nutr 134: 3479S-3485S.

11. Kumar RA, Sridevi K, Kumar NV, Nanduri S, Rajagopal S (2004) Anticancer and immunostimulatory compounds from Andrographis paniculata. J Ethnopharmacol 92: 291-295

12. Mothana R, Grunert R, Lindequist U, Bednarski PJ (2007) Study of the anticancer potential of Yemeni plants used in folk medicine. Pharmazie 62: 305-307

13. God JM, Tate P, Larcom LL (2007) Anticancer e؛ects of four varieties of muscadine grape. Med Food 10: 54-59

14. Zhang H, Wang X, Chen F, Androulakis XM, Wargovich MJ (2007) Anticancer activity of limonoid from Khaya senegalensis. Phytother Res 21: 731-734

15. Widodo N, Kaur K, Shrestha BG, Takagi Y, Ishii T, et al. (2007) Selective killing of cancer cells by leaf extract of Aswagandha: LdentLficDtLon of a tumour-inhibitory factor and the first molecular insights to its e؛ects. Clin Cancer Res 13: 2298-2306

16. Wang SY, Feng R, Bowmank L, Lu Y, Ballington JR, et al. (2007) Antioxidant activity of Vaccinium stamineum;exhibition of anticancer capability in human lung and leukemia cells. Planta Med 53: 451-460.

17. Neto CC (2007) Cranberry and its phytochemicals:a review of in vitro anticancer studies. J Nutr 137: 186S-193S.

18. Wang MY, Su C (2001) Cancer preventive e؛ect of Morinda citrifolia. Acad Sci 952: 161-168

19. Guruvayoorappan C, Kuttan G (2007) Immunomodulatory and antitumour activity of Biophytum senstivium extract. Asian Pac J Cancer Prev 8: 27-32

20. Ferguson PJ, Kurowska EM, Freeman DJ, Chambers AF, Koropatnick J (2006) Invivo inhibition of growth of human tumour lines by flDvDnoLd from cranberry extract. Nutur Cancer 56: 86-94.

21. Roy MK, Kobori M, Takenaka M, Nakahara K, Shinmoto H, et al. (2007) Antiproliferative e؛ect on human cancer cell lines Dier treatment nimbolide extracted from an edible part of the neem tree. Phytother Res 21: 245-250.

22. Arulkumaran S, Ramprasath VR, Shanthi P, Sachdanandam P (2006) Restorative e؛ect of Kalpaamrutha, an indigenous preparation, an oxidative damage in mammary gland mitochondrial fraction in experimental mammary carcinoma. Mol Cell Biochem 291: 77-82.

23. Amirghofran Z, Bahmani H, Azadmehr A, Javidnia K (2006) Induction of apoptosis in leukemia cell lines by Linum persicum and Euphorbia cheiradenia. J Cancer Res Clin Oncol 132: 427-432

24. Jeune ML, Kumi-Diaka J, Brown J (2005) Anticancer activities of pomegranate extracts and genistein in human breast cancer cells. J Med Food 8: 469-475.

25. Malikovia J, Swaczynova J, Kolar Z, Strnad M (2007) Anticancer and antiproliferative activity of natural brassinosteroids. Phytochemistry 69: 418-426.

26. Natesan S, Badami S, Dongre SH, Godavarthi A (2007) Antitumor activity and antioxidant status of the methanol extract of Careya arborea bark against Dalton's lymphoma ascites induced ascetic and solid tumor in mice. J Pharmacol Sci 103: 12-23.

27. Rajkapoor B, Jayakar B, Murugesh N (2004) Antitumor activity of Indigofera aspalathoides on Ehrlisch ascites carcinoma in mice. Indian J Pharmacol 36: 38-40.

28. Shoemaker M, Hamilton B, Dairkee SH, Cohen I, Campbell MJ (2005) Invitro anticancer activity of twelve Chinese medicinal herbs. Phytother Res 19: 649-651.

29. Dongre SH, Badami S, Godavarthi A (2008) Antitumor activity of Hypericum hookeranium against DLA induced tumor in mice and its possible mechanism of action. Phytother Res 22: 23-29.

30. Faried A, Kurnia D, Faried LS, Usman N, Miyazaki T, et al. (2007) Anticancer e؛ects of gallic acid isolated from Indonesian herbal medicine, Phaleria macrocarpa Boerl, on human cancer cell lines. Int J Oncol 30: 605-614

31. Shukla Y, Singh M (2007) Cancer preventive properties of ginger: a brief review. Food Chem Toxicol 45: 683-690.

32. Amirghofran Z, Bahmani M, Azadmehr A, Javidnia K (2005) Anticancer e؛ects of various Iranian native medicinal on human tumor cell lines. Neoplasma 53: 428-433.

33. Wang W, Zhao Y, Rayburn ER, Hill DL, Wang H, et al. (2007) Invitro anti-Cancer and structure activity relationships of natural products isolated from fruits of Panax ginseng. Cancer Chemother Pharmacol 59: 589-601.

34. Sullivan R, Smith JE, Rowan NJ (2006) Medicinal mushrooms and cancer therapy: translating a traditional practice in to western medicine. Perspect Biol Med 49: 159-170.

35. Zhao Y, Wang CM, Wang BG, Zhang CX (2005) Study on the anticancer activities of the Clematis manshrica saponins invivo. China journal of Chinese materia medica 30: 1452-1453.

36. Xu M, Cui J, Fu H, Proksch P, LinW, et al. (2005) Embelin derivatives and their anticancer activity through microtubule disassembly. Planta Med 71: 944-948.

37. Modzelewska A, Sur S, Kumar SK, Khan SR (2005) Sesquiterpenes: natural products that decrease cancer growth. Curr Med Chem Anticancer Agents 5: 477-499.

38. Lee JY, Hwang WI, Lim ST (2004) Antioxidant and anticancer activities of organic extracts from platycodon grDndLflorum A De candolle roots. J of Ethonopharmacology 93: 409-415.

39. Rosangkima G, Prasad SB (2004) Antitumour activity of some plants from meghalaya and mizoram against murine ascites dalton's lymphoma. Indian J of Exp Biol 42: 981-988.

40. Lellau TF, Liebezeif G (2003) Cytotoxic and antitumour activities of ethanolic extracts of salt marsh plants from lower saxonian wadden sea, Southern North sea. Pharmaceutical Biology 41: 293-300.

41. Dufour D, Pichette A, Mshvildadze V, Hebert ME, Lavoie S, et al. (2007) Antioxidant, $ntL-LnflDmmDtor\ and Anticancer activities of methanolic extracts from Ledum groenlandicum Retzius. J Ethnopharmacol 111: 22-28.

42. Jagetia G, Rao SK (2006) Evaluation of the antineoplastic activity of guduchi Tinospora cordifolia in Ehrlich ascites carcinoma bearin mice. Biological and Pharmaceutical Bulletin 29: 460-466.