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Immune enhancement through phytoconstituents: An overview

Garima Lohiya[1], Grace Cornelius[2], Dr. Rashmi Sharma[3], Sandhya Lohiya[4]
[1, 2] Research Scholar, Zoology Department, SPC. Govt. College, Ajmer, Rajasthan, India
[3] Associate Professor[3], Dept in Zoology, SPC.Govt. College, Ajmer, Rajasthan, India
[4] Lecturer, Computer Science, GPC, Udaipur, Rajasthan, India

Abstract
Plants are the "key factor" for existence of life as they regulate the biological cycles as well as synthesis their food by the process of photosynthesis. According to the oldest book "Rigveda" they also provide herbal formulation in many diseases in forms of leaves, stem, bark, root, flower extracts, powder, syrup, lotion, quath, bhasma, churna, rasayna etc in the treatment of many diseases like leucoderma, intestinal disorder, skin disease, leprocy, jaundice, syphilis, insect bite, facial paralysis, rheumatism and many type of cancer like liver cancer, stomach cancer, throat cancer, jaundice, piles, ulcer, rheumatism, swelling, chest pain, joint pain, migraine, blood dysentery, biliousness, fever and heart disease.
Among the 10,000 already documented phytochemical constituents, almost 6000 compound present in plant derived food – fruits, vegetables, baverages and herbal medicine, due to their defence mechanism against radiation, virus, parasites and types of cancer-lung cancer, breast cancer, prostate and GIT cancer. Coloured fruits and vegetales are excellent source of beta-carotene, lutein, lycopene, minerals, flavonoids, anthocynidin. Green plants contain huge amount of chlorophyll and fiber, which improve the blood flow and lessen fat deposition in body and work as detoxifier and anticancer agents. Crucifereae and lilly families' members contain large amount of sulphur compound, Indole- reduced the risk of breast cancer and detoxify the GIT, Glucosinolates prevent from colon cancer, Sulforaphane and indole-3-carbinol inhibit HPV, main cause of Womb cancer. Carotenoid, lycopene inhibit the growth of tumor, less the risk of breast, lung, prostate cancer. Limonoids work as chemoproective agents. "King of alkaloids" (wheat grass) contains chlorophyll, which is structurally similar of Hemoglobin and known as green blood. Iso-flavones and Genistein, it is closely related with human estrogen provide defense against cancer. Phytoconstituents posses protective and antioxidative nature due to presence of antioxidants, anthraquinone, anthocynidin, lycopene, lutein, carotene, minerals, various types of vitamins, flavonol, fibers, glycosides, sugars, amino acids, phenol and much more. Natural antioxidants are safe, effective, defensive, protective, less toxic or non-toxic and economically viable while synthetic antioxidants may be dangerous for health and expensive.

Keywords: carotene, lycopene, genistein, indole, sulphur compounds, favonoids, anticancerous nature

Introduction
Fruits and vegetables are miraculous food as they are good source of minerals, vitamins, amino acids, fiber, carbohydrates, protein and many victuals. Many phytochemical compounds: anthocynin, flavones, flavonoids, tannin, phenolic, polyphenolic compounds, sulphur contains compound, alkaloids, carotene, lycopene, lutein, essential oil etc. are also present. In form of fruits, vegetables, green plants nature provide us natural antioxidant, which improve our immunity, reduce the risk of disease or various types of cancer which are the result of oxidation of cell content of reactive oxygen species and free radicals. These antioxidants have no or less side in comparison of lab construct compounds. Plant derived products are being used in the treatment of various disease along with cancer.

Review of Literature
Enas Ali (2013) [1], Ashawat (2007) [2] determined the antioxidant activity of glycyrrhiza. Bhattacharya and chatterjee explained the activity of tannoid of Amla. Rajeshwari *et al.* (2012) [11], elaborated the medicinal and traditional uses of Aloe vera. Sanlier & Guler (2018) [12], give detail on Brassica on human health while the Raj V., (2012) [10] give account on stone fruit apricot.
Here we list some vegetables and fruits with their medicinal properties, family and phytoconstituents.

Table 1

Botanical name	Common name	Family	Phytoconstituents	medicinal properties
Brassica oleracea var. italic	Broccoli	Brassicaceae	Isothiocyanates, Vit C and A, Thiol, folic acid, indoles-3-carbinol, Sulporahane	Burn fat/ decrease obesity, prevent gastro-intestinal disease, colon cancer, Breast cancer, prostate cancer, womb cancer, high blood pressure,
Brassica oleracea var.	Cabbage	Brassicaceae	Glucosinolates, sulporaphane, indole-3 carbinol, phenols, flavonoids, allyl isothiocynate,	Anti-inflammatory, anticancer, support GIT, cardiac function, reduced cholesterol

			benzyl-isothiocynate	
Brassica oleracea var. botrytis	Caulifolwer	Brassicaceae	Glucosinolates, beta carotene, beta crytoxanthin, quercetin, kaemferol, fatty acid- omega 3 and omega 6 fatty acids, amino acid	Antimutagenic, anti-oxidant, anticancer, reduce the risk of colon,urinary tract cancer
Asparagus recemosus	King of vegetables, Shatawari, Shatamaull	Asparagaceae	Glutathione,Iso flavones, steroids, saponin, Tyrosine, arginine, flavonoids,poly cyclic alkaloids, resin, tannin, folic acid	Anticancerous, protect heart and cataract, Anxiety, cancer, dirrhoea, tuberculosis, diabetes, PMS, uterine problem
Wheat Grass	King of alkaloids	Poaceae	Vit A, C, E, Fe, Mg, ca, amino acid, chlorophyll,	Maintain alkalinity of body, increase level of SOD, abscisic acid and Hb
Solanum tuberosum	Potatoes	Solonaceae	Vit A, E, K, Vit C Vit B1, B2, B3, B5, B6, Fiber, Minerals	Used in gastric ulcer, constipation, Diabetes, Obesity, burns, arthritis
Solanum melongena	Egg plant	Solonaceae	Arginine,flavonoids, Asparticacid, glycoalkaloid,	Cancer, Pyorrhoea, constipation, asthma,
Withania somnifera	Ashwagandh	Solonaceae	Ascorbic acid, Catalase, peroxidase	hepatoprotective, boost immunity
Allium sativa	Lahsan, Garlic	Liliaceae	Sulphur compound- indole, thiole, S-allyl cysteine, Amino acid, glycoside, flavones,	Gastrointestinal problem specially nitrate, nitrites degradation derived cancer, arthritis, cough, asthma, breast cancer, prostate cancer and heart problem, antibacterial
Allium cepa	Onion	Liliaceae	Diallyl disulphide, diallyl trisulphide, S- allyl cystein,	Inhibit tumor growth in stomach and GIT, good for skin and hair
Citrus fruits		Rutaceae	Carotenoids, lutein, lycopene, limonene, bioflavonoids,	Help in detoxification of liver, protect from prostate cancer,
Thea sinesis	Green Tea	Thiaceae	Flavonoids, minerals, terpenes, phenocarboxylic acid, Caffeic, ferulic acid	Astringent, increase coronary cardiac output, increase muscle contraction and bronchial, urethral muscle relaxation, degrade carcinogen, prevent digestive tract from nitrosamine.
Beans, Legumes		Febaceae	Lignans, fiber, phytoestrogen, genistein, saponin, iso-flavone, phytoestrogen	Prevent from cancer, uterine cancer,
Glycyrrhiza glabra	Mulathi, Licoric	Fabaceae	Glycyrrhizinic acid, glycyrrhizic acid, glabrin A and B, Eugenole, indole, estragole, anethole	In cough, Asthma, Head-ache, Diarrhoea
Linum usitatissimum	Flax Seeds	Linaceae	Lignans, protein, alpha linolenic acid, fiber, minerals	Provide defense against hormone sensitive cancer and problems, prevent from constipation, cancer, hyperglycemic condition, heart problems and radiations
Ganoderma lucidum	Mushroom		Beta-D-glucose	Reduce side effect of chemotherapy
Aloe vera		Asphodelaceae	Aloe emodin, acemannan,	Activate immunity, prevent from cancer, good for skin, reduce blood sugar level
Malus domestica	Apple	Rosaceae	Phenols, minerals, pectin, catechins, flavonol, quercetin, phenols, ideain an anthocynin	Protect pancreatic cells transformation into cancer cells, colon cancer, maintain blood sugar and pressure, regulate appetite
Prunus armenica	Khubani, stone fruit, apricot	Rosaceae	Vit C, fiber, fe, Ca, minerals	Anticancer, good source of minerals
Emblica officinalis	Amla	Euphorbiaceae	Bioflavonoids, flavones, polyphenols, carotenoids, excellent source of ascorbic acid	Hypoglycemic, antioxidative, hypolipidemic, prevent from cold, cough, aging, high choles-terols, high BP, keeps healthy tract, improve Hb and immunity, anticancer
Zingiber officinale	Ginger	Zingiberaceae	Volatile oil, pardol zingerone, 6-gingerol, Terpenoid	In cough, Asthma, Head-ache, Diarrhoea
Cucurma longa	Turmeric	Zingiberaceae	Cucurmin, Eugenol, beta-pipene, Camphene	Liver problem, cough, wound healing and in bacterial and fungal disease

Conclusion

On the basis of the above literature, we can say plant and their products are treasure of us they provide not only energy, fresh air or regulate our ecological cycles but also provide us many primary and secondary metabolites. Alkaloids balance body pH, indole, thiole, iso-flavonol prevent from breast and prostate cancer, which are top most common cancer in women and men. Limonoids detoxify the liver and increase their solubility in water, for excretion. Sulphoraphane, indole-3-carbinol reduce the risk of breast cancer by increase the D-gluconolactone. Genistein shown their resemblance with estrogen, Wheat grass, “green blood” are chlorophyll rich and structurally similar to hemoglobin, increase the conc. of Hb. So we are intake more fruits, vegetables and their products, risk of cancer and many other ROS diseases are lessen.

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