IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Antineoplastic Venture Of *Hippophae Rhamnoides* Ramification In Human

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Abstract

Sea buck thorn (*Hippophae rhamnoides*) attributed wide range of bioactive compounds such as Vitamins (A, B, C, and E), Phenolic acids, Flavonoids and Fatty acids. There are various Flavonoids are present such as quercetin, isorhamnetin are present as well as presence of various types of fatty acids are present such as omega-3, omega-6, omega-7 and omega -9. They have rich source of natural antioxidants such as ascorbic acids, tocopherols, carotenoides and flavanoids. These types of bioactive compounds are used to stimulating the immune system of various body parts such as liver, colon, breast, kidney and leukemia cells. The extracts of berries and fruits have antiproliferative properties in human colon cancer, prostate cancer. The leaves of seabuckthorn are used to inhibit the growth of prostate cancer cells. The bark and roots are used to cure the antitumour cells in human. It is basically used in chemotherapies and radiotherapies to protect the liver cells and increase the efficacy of immune response in human. It seems that reactive oxygen species and inflammatory regulators are used in health promoting potential. Sea buck thorn is generally used in humans and animal nutrition and it is used in promotion of mass scale utilization by humans

Keywords: Flavonoids, Tocopherols, Carotenoides, Antitumour, omega, 3,6,7,9

Introduction:-

Sea buckthorn (SBT) is a deciduous shrub that is also called sea berry, sallow thorn, and sand thorn. It is originated in East Himalayas. Every part of this plant is used as medicines whether it is of leaves, stem, roots, branches, fruits and berries that are used in nutritional supplement and wild life habitats. That's why it is called Wonder plant, Golden Bush or called Gold Mine (Singh B, Peter K, 2018; Stoban T etal., 2013). Sea buck thorn (SBT) contains 200 bioactive compounds that is called "source of nutrition and health care" as well as it is called "natural vitamin treasure house". In 18 century Tibetans basically used sea buck thorn as 'Somaratsa' that is used in slow digestion, ulcers, liver injuries, skin diseases as well as cardiovascular diseases (Suryakumar G etal., 2011). Sea buck thorn (SBT) plays very important role in pharmacological activities such as anti inflammatory, anticancer, anti viral. They impute several types of vitamins, carotenoids, polyphenols and fatty acids(Massodi K etal.,2020;Olas B etal.,2016;Resedi D etal.,2019;Tanwar H etal.,2018;Verma H etal.,2011;Stoban T etal.,2010., Pop R etal.,2014;Yang F etal.,2016;Marsinach S etal.,2019).The present review provides extensive epitome on the bioactive compounds and antineoplastic ventures of sea buck thorn.

2) Nutritional and Bioactive compounds

Seabuck thorn (SBT) contains 200 nutrients and bioactive compounds. Carotenoids and polyphenolic compounds it contains phenolic acids and flavonoids. Phytosterols, fattyacids, organic acids, aminoacids. The nutritional and bioactive composition of sea buck thorn depending on genetic variation, climatic and growth conditions, degree of maturity, storage conditions, harvest time and processing method (Kuhkheli A etal., 2017). It contains minerals which have phosphorous, potassium, calcium, magnesium, iron, zinc, Maganese, copper, boron, nickel, cadmium, lead are present. There are various organic acids are also present such as L-malic acid, D- malic acid, succinic acid, citric acid, Tartaric acid, Quininic acid, Pyruvic acid, Acetic acid, Formic acid, Oxalic acid, Isocitric acid is present. There are 17 types of amino acids are present such as Aspartic acid, serine, Glutamic acid, Glycine, Alanine, Cysteine, Tyrosine, Histidine, Arginine, Proline, Threonine, Valine, Methionine, Isoleucine, Leucine are present.

3) Cultural Managemaent

Sea buck thorn (SBT) is grown in spring season.SBT needs arid and semiarid areas to produce high yield and good quality of food. It should include fertilization and cultural practices that include spacing, pruning, and irrigation and weed control (Walhberg and Jeppsson, 1990; Wolfe and Wegert, 1993). Sea buck thorn found in slopes, riverbanks and seashore. SBT grow in acidity and alkalinity of soil whose ph is 5.5-8.3.SBT endures the extreme conditions for air temperature of -43 degree Celsius (Lu.1992).The purpose of pruning of sea buck thorn promote growth and facilitate harvesting will increase the yield and

fruiting life of a plant. SBT grows upto 2-3m in 4 years and forms its crown at the base of the main trunk (Lu.1992).

4) Medicinal Value

Medicinal value of SBT is very well developed in Asia and Europe. There are ten types of drugs are used from SBT that is available in many forms such as liquids, powders, plasters, films, pastes, pills, lininments, suppositories and aerosols. .that are used in treating oral, mucositis, rectum mucosities, vaginal mucosities, cervical erosion, radiation damage, burns, scalds, duodenal ulcers, gastric ulcers, chilblains and skin ulcers (Abartene and Malakhovskis etal.,1975).

5) Antineoplastic activity in Sea buck thorn

Sea buck thorn (SBT) indicates that the bioactive elements possess antineoplastic properties. In Colon cancer efficacy that the sea buck thorn polyphenols play very important role to regulate the expression of hsa- miRNA-1247-3p, has-miR-497, hsa-miR-3609 regulated the colon cancer cells. They effectively stops and progression of colon cancer (Pan etal., 2015).

Sea buck thorn efficiently targeted to androgen receptor and down regulated to prostate specific antigen (PSA), lysine –rich leukemia 2 that is called ELL2 and ELL- associated factor 2(EAF2) in vitro calreticulin (CALR)(Ghangal, Chaudhary, Jain, Purty and Sharma,2013). Prostate cancer successfully inhibited from sea buck thorn leaves. They have the ability as a functional diet to prevent the prostate cancer because there is the regulation of pro-apoptotic protein –B cell lumphoma-2 that is called BCL2X and reduced the production of reactive oxygen species ROS. Similarly, active component of sea buck thorn isorhamnetin is used to increase the expression of pro-apoptotic protein in gastric cancer cells to inhibit the autophagy in MKN-45 and promote the apoptosis by activation of P13K that is phosphoinositide3-kinaseB(Zhao P.,Liu J., Wei T., Ma X., Cheng Q., Huo S.,Zhang C.,Zhang Y etal.,2017). Carotenoids involved lycopene help to reduce the risk of lung cancer, cervical cancer and breast cancer (Sajfratova etal., 2010;Dulf,2012).

6) Traditional uses of sea buck thorn

Sea buck thorn is generally used in skin health benefits of reactive oxygen and nitrogen species. Nitrogen dioxide and nitrous acid are mutagenic agents that damage the gamma tocopherol to play important role in forming 5-nitro-gamma tocopherol. It is seemed that alpha and gamma tocopherol is more reactive than other species. Gamma tocotrienol is more effective than alpha tocopherol to inhibit the lipid peroxidation process. It is seen that Sea buck thorn is used to skin hydration, increase the elasticity as well as anti wrinkle efficacy. So it is found that sea buck thorn is basically used to enhance the skin health effects and aging as well as environmental stressors (Rodriguez E., 2024)

Sea buck thorn is also used in reducing the body weight due to increase the level of palmitic acid to reduce the body weight and blood sugar level in hypercholestrolomic hamsters. Sea buck thorn has bioactive compounds such as ascorbic acid, vitamins, antifreeze effects is used in food additive. Sea buck thorn yogurt is plant based additive that is more beneficial due to its fats, protein, carbohydrates and vitamins. It makes the functional and nutritive yogurt as comparison to plain yogurt (Gunenc A etal., 2016).

Similarly Sea buck thorn is generally use as antioxidant activity due to high level of carotenoids and polyphenols content. Sea buck thorn has organoleptic properties in jellies that are used in amtioxidants (Chauhan AS etal. 2007).

7.) Conclusion

Sea buck thorn plays very important role in cancer prevention and its treatment due to its bioactive compounds that is used in anti-inflammatory, antioxidant and its antiproliferative properties. It helps to support immune response and protects healthy cells during chemo therapies and radiation. It offers as a traditional and natural medicine found in nature that helps in well-being. It is determined that sea buck thorn is used as safe and effective doses for cancer prevention and its treatment especially in chemotherapies and radiation therapies.

8.) References

1. Singh A, Peter K., *Indian Sea buck thorn.* New age herbals. Singapore: Springer; 2018.p 29-54.

2. Stoban T, Targais K, Lamo D, Srivastava R. Judicious use of natural resources: a case study of traditional uses of sea buck thorn in trans-himalayan ladakh. *India Natl. Acad Sci Lett.* 2013. 36:609-13.

3. Suryakumar G, Gupta A. Medicinal and therapeutic potential of Sea buck thorn. *J. Ethnopharmacol*.2011.138:268-78.

4. Massodi K, Wani W, Dar Z, Mansoor S, Anamul-Haq S, Farooq I, etal., Seabuck thorn inhibits cellular proliferation, wound healing and decreases expression of prostate specific antigen in prostate cancer cells in vitro. *J Funct. Foods.*2020.73:104102.

5. Olas B. Sea buck thorn as a source of important bioactive compounds in cardiovascular diseases. *Food Chem Toxicol*.2016.97:199-204.

6. Redei D, Kusz N, Rafai T, Bogdanov A, Burian K, Csorba A etal.,14-noreudesmanes and a phenylpropane hetero dimer from sea buck thorn berry inhibit Herpes simplex type 2 virus replication. Tetrahedron.2019.75:1364-70.

7. Tanwar H, Singh D, Singh S, Ganju L. Antiinflammatory activity of the functional groups present in sea buck thorn leaf extract. *Inflammopharmacology.* 2018.26:291-301.

8. Verma H, Chahota R, Palial A, Sharma M. Amtibacterial properties of sea buck thorn leaf extracts against common skin and wound bacteria. *Indian J Vet Res*.2011.20:38-41.

9. Stoban T, Chaurasia O, Korekar G, Yadav A, Singh S. Attributes of sea buck thorn to meet nutritional requirements in high altitude. *Def Sci J.* 2010.60:226-30.

10. Pop R., Weesepoel Y, Socaciu C, Pintea A., Vincken J, Gruppen H. Carotenoid composition of berries and leaves from six Romanian sea buck thorn varieties. *Food Chem.*2014.147:1-9.

11. Yang F, Suo Y, Chen D, Tong L. Protection against vascular endothelial dysfunction by polyphenols in sea buck thorn berries in rats with hyperlipidemia. *Biosci trends*.2016.10:188-96.

12. Marsifiach S, Cuenca A. The impact of sea buck thorn oil fatty acids on human health. *Lipids Health Dis.*2019.18:145.

13. Kuhkheil A, Badi H, Mehrafarin A, Abdossi V. Chemical constitutents of sea buck thorn fruit in populations of central albroz mountains in Iran. *Res J Pharmacogn.*2017.41:1-12.

14. Walberg K and Jeppsson N. Development of cultivars and growing techniques for sea buck thorn, black chokeberry, Lonicera and Sorbus, *Sverigges Lantbruksuniversitedt Balsgard-Avdelningenfor Hortikulturell Vaxforadling Verkasmhetsberattelse*.1990-1991:86-93.

15. Wolf D and Wegert F. Experience gained in the cultivation, harvesting and utilization of sea buck thorn. Cultivation and utilization of wild fruit crops. Germany: *Bernhard Thalacker Verlag Gmbh and Co.*

16. Lu R. Sea buck thorn: A multipurpose plant species for fragile mountains. *ICIMOD* Occasional Paper No. 20.Kathmandu, Nepal.

17. Abartene, D.Y. and Malakhovskis AI. Combined action of a cytostatic preparation and sea buck thorn oil on biochemical indices.1975. *Lietuvos TSR Mokslu Akademijos Daebai Serijia C Bioligijos Mokslai* 1:167-171.

18. Pan P, Skaer, Stirdivant C.W.,Young S.M., M.R Stoner G.D ,Lechner JF. Beneficial regulation of metabolic profiles by black raspberries in human colorectal cancer patients. Cancer Prevention Research (Phila).2015.8(8), 743-750.

19. Ghangal etal. Optimization of de novo short read assembly of Sea buck thorn transcriptome. 2013. 8(8).

20. Zhao P. etal., Acute and subchronic toxicity studies of sea buck thorn oil in rodents. *Regul. Toxicol. Pharmacol.*2017.91, 50-57.

21. Sajfratova M etal. Beta-Sitosterol: supercritical carbon dioxide extraction from sea buck thorn seeds. 2010. Int. J. Mol. Sci.11, 1842-1850.

22. Dulf F.V. Fattyacids in berrylipids of six sea buck thorn cultivars grown in Romania. 2012. *Chem. Cent.J.*6, 1-12.

23. Rodriguez E. Use of Sea buck thorn oil in the treatment of skin Disease. *Scientific Research* Publishing, 2024.

24. Gunenc A etal.Sea buck thorn as a novel prebiotic source improves probiotic viability in yogurt.2016.LWT-Food Science and Technology.66.,490-495.

24. Chauhan AS etal. Antioxidant and antibacterial activities of aqueous extract of Sea buck thorn seeds. 2007., *Fitotrepia.*, 78.,7-8(590-592).