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RESEARCH ARTICLE

ROLE OF KAMALA (NELUMBO NUCIFERAGaertn.) IN PREVENTION AND MANAGEMENT OF GARBHASHAYA ARBUDA WITH SPECIAL REFERENCE TO UTERINE CANCER

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Abstract

"Arbuda" is a disease which grows very fast and causes either destruction of local tissues or body part or even death. In India, uterine cancer ranks 3rd among genital malignancy next to cervix and ovary. Uterine cancer differentiated into 2 types on the basis of their site of origin. One is endometrial cancer, most common form of uterine cancer and accounts for 95% of all the cases. Second is Uterine sarcoma (mamsajaarbuda), initiates in other tissues or muscles of uterus and accounts for 5% of all uterine cancer cases. The symptoms of uterine cancer includes- excessive and prolonged menstrual bleeding, watery-sticky foul smell discharge per vagina, bleeding after coitus and pain in lower abdomen. So in order to combat these problems of women, Ayurveda has the potential in prevention as well as in management of garbhashayaarbuda. Kamala (NelumbonuciferaGaertn.) helps in vitiation of pitta dosha and has cooling effect by sheetaveerya. It helps in blood clotting, thus stops excessive and prolonged menstrual bleeding. As well as it act as haemostatic agent due to madhura and kashaya rasa. Presence of tannin shows coagulation property, presence of iron shows haematinic property. AcharyaVagbhata mentioned it as rasayana, hence it promotes strength, virility and intellect. Kamala seeds contain polyphenols, flavonoids, hyperin. These effectively scavenge free radicals and maintain the balance of reactive oxygen metabolism at cellular level as well as delay ageing of a uterine cell. Neferine has anti-cancer activities. It inhibits cancer cell proliferation by inducing apoptosis. Kamala is also useful in heat created due to chemotherapy and radiotherapy.

Introduction:-

Woman's health is considered to be the one concerned withFamily, society and culture. According to 2010, World health organization report, uterine fibroidaffects between 20-25% of women and close to 235 million women who represent 6.6% of global women population are estimated to have been affected worldwide[i]. Owing to complicated structure of the female body, Women are subject to a large number of complaints connected with reproductive system and surrounded with various kinds of diseases in which Garbhashayaarbuda (Uterine fibroid &uterine

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cancer) is most complicated disease in women. These are major cause of morbidity in women of a reproductive age and sometimes even after menopause[ii].In India, uterine cancer ranks 3rd among genital malignancy next to cervix and ovary. "Arbuda" is a disease which grows very fast and causes either destruction of local tissues or body part or even death. All relatively big neoplasms developing from muscular andfibrous tissues (myoma and fibromas) come under MamsajaandraktajaArbuda.These are the monoclonal tumors of uterine smooth muscle cells and consist of large amounts of extracellular matrix that contain collagen, fibronectin and proteoglycan.The majority of patients with cancer present to a cancer treatment centre in late stages of the disease (80% are advanced) and this adds to the already high morbidity, mortality and expenditure. Available treatment protocol in modern science are costly and having many side effects. For Cancer prevention, there is no uniform cancer prevention strategy for the entire country[iii]. So, it is the need of today's era that, a secure, less expensive and more effective therapy for this sensitive problem should be developed by Ayurveda.

Aims & Objectives:-

Aim-

To Study the role of Kamala (NelumboNucifera) in Prevention and Management of GarbhashayaArbudaWith Special Reference to Uterine Cancer.

Objectives:-

1. To establish thethe role of Kamala (NelumboNucifera) in Prevention and Management of GarbhashayaArbuda with special reference to Uterine Cancer.
2. Conceptual study of Role of Kamala (NelumboNucifera) in Prevention and Management of GarbhashayaArbuda with special reference to Uterine Cancer.

Methodology:-

Literary references were collected from Ayurveda i.e. classics, commentaries, modern literatures, research journals available in institute library, online portals like Pubmed central, Ayush research portal, Google scholar and analyzed to frame conceptual work.

Description of GarbhashayaArbuda in Classics

In Ayurveda text, AcharyaCharakadescribed "Arbuda"in chapter dealing with Shotha[iv]due to similarity between basicclinical features i.e. swelling or protuberanceand it is also included among thedisease of vitiated Mamsai.e. MamsaPradoshajaVikara. AcharyaSushruta[v]has described very clear definition, i.e."TheDosha having vitiated in any part of the body and afflicting the Mamsaandproduces a swelling, which is circular, fixed, slightly painful, big in size, broad based,slowly growing and does not suppurate."AcharyaSushruta also mentioned that the pradushta(vitiated) dosha causes sampidana (compression) or sankoshana (contraction) of rakta&sira, resulting in the inflammation of the surrounding dhatu (tissues) and it gives rise to a fast growing (Shigravriddhi) swelling (mamsapinda) which is Raktajaarbuda[vi]. AcharyaHaritamentioned that the blood vessels sprout either due to suppression of naturalurges, ulcers(which leads to overbalanced nervous system i.e. Vata).These newlyformed vessels are again obstructed resulting into obstruction of passes of blood. Dueto this obstruction in flow of blood, big and thick "Arbuda"develops.

Arbuda is aSangaPradhanaVyadhiwhich is the result of AvaranainRasavaha, MamsavahaandMedavahaSrotas. When any Srotasget involved in any disease process, the role ofAgni and Amashould be considered importantly.

Description of Uterine Cancer According to Modern Text-

Uterine cancer differentiated into 2 types on the basis of their site of origin. One is endometrial cancer, most common form of uterine cancer and accounts for 95% of all the cases. Second is Uterine sarcoma (Mamsajaarbuda), initiates in other tissues or muscles of uterus and accounts for 5% of all uterine cancer cases. Tumors of corpus uteri include polyp, adenoma & leiomyoma. Leiomyoma is most common of all pelvic tumors, being present in 20% of women in reproductive age group and increases with age. Leiomyoma are slow to grow & it is often said to take 3 years for one to reach the size of an orange. The symptoms of includes- excessive and prolonged menstrual bleeding, watery-sticky foul smell discharge per vagina, pressure symptoms, bleeding after coitus and pain in lower abdomen, impaired fertility in reproductive age. General effects of leiomyoma include:

1. Anemia, as a result of menorrhagia- Polycythemia cause by tumor.
2. Systemic effect of uterine leiomyoma is Hypoglycemia.

3. Menstrual disturbances: Duration of period may be normal or prolonged and loss is heaviest on 2nd& 3rd days, it sometimes describe as "Flooding"[vii].

The woman who suffers from menopausal bleeding is said to have a 3 times increased chance of developing adenocarcinoma of corpus uteri.

In Uterine cancer, free radicals are the main factor of oxidative damage. Reactive oxygen species (ROS) are formed by hydrogen peroxide or superoxide anions. The increased production of ROS results in oxidative stress. The excess of ROS cause DNA damage & harmful to uterus cells and tissues[viii].

HetuofGarbhashayaArbuda-

1. Intake of Mithyaaahara, Viruddhabhojana, Abhishyandibhojana (e.g. Mandakadadhi)
2. Ratrijagrana and divashayana
3. VishamaPrasuti- Due to abnormal deliveries and abortion etc[ix].
4. Vega dharana[x]

Risk Factors Of Uterine Cancer-

1. Nulliparity
2. Late menopause
3. Obesity
4. Diabetes mellitus
5. Unopposed estrogen therapy
6. Tamoxifen therapy
7. Complicating factor is immunosuppressant properties of most anti-tumor drugs[xi].

Patho-Physiology OfgarbhashayaArbuda (Uterine Cancer)–

Hetu- NidanaSevana i.e. Excessive intake of katu (Spicy), amla (Acidic) &Kshara (Salty) substances and similar things causing disorder of pitta, increases level of pitta and attack the yoni i.e. female genital organ.

↓

Linga-Certain changes in body causing:

- ✓ Imbalance of dosha governing menstruation.
- ✓ Apanavayu is encircled by pitta, results in menorrhagia with yonisantapa.
- ✓ Disorders of rakta itself produce abnormal bleeding. As per AcharyaSusruta, Pitta vriddhi cause atipravriti[xii]i.e. menorrhagia.
- ✓ Influence of disordered vata on blood vessels supplying uterus.
- ✓ Irritation of artavawahadhamani.

↓

- ✓ The increased disordered vata affects the uterine vessels & the raja, to cause severe bleeding namely Raktapradara. AcharyaBhela explains that the genital tract becomes pathological in this condition.

↓

ArtavaVahaSrotasdushti

(SrotoDushti : SangaandSiragranthiinGarbhashaya)

↓

Garbhashayaarbuda

Side Effects Of Modern Treatment Of Uterine Cancer-

1. To correct the anemia, Leuprolide acetate depot 3.75 mg is advised. But it causes asthenia, headache, hot flushes, GI disturbances, Nausea/vomiting, edema, weight gain/loss, acne, hirsuitism[xiii] etc.
2. To control menorrhagia, Danazol is advised. It inhibits FSH & LH secretion thus inhibiting follicle development with resultant endometrial atrophy. Side effects of danazol are androgenic effects such as hot flushes, myalgia, weight gain & acne, which occur in 85% of users. Although side-effect of ovulation inhibition by suppressing HPO axis was also observed from oral danazol[xiv].
3. GnRH agonists decrease the volume of uterus and leiomyoma by 40-60%. But GnRH agonists have many side-effects; they are used for short periods (less than 6 months). After a woman stops taking a GnRH agonist, her fibroids usually return to their previous size[xv].
4. Chemotherapy toxicity- Chemotherapeutic agents act upon normal cells as well as malignant tissues. It causes bone marrow suppression, nausea/vomiting, alopecia, renal and cardio toxicity[xvi].

Samprapti-

Dosha: Predominance of KaphaandVatawith Tridosha
Dushya:Rasa, MamsaandMeda
Srotas:Rasavaha, Mamsavahaand, Medavaha
Srotas` :ArtavaVahaSrotas
SrotoDushti :SangaandSiragranthi
Agni :Manda
Rogamarga :Bahya
Udbhavasthana :Ama-PakvashayaSamuttha
Adhisthana :Garbhashaya
PratyatmaLinga :MamsopachayamTuShopham

Aushadha:

Kamala (NelumboNucifera) In Prevention And Management Of GarbhashayaArbuda[xvii]-

The present conceptual study mainly follows the Hetu, Linga and Aushadha concept (Trisutra) of AcharyaCharaka. Ayurveda affirmed "Trisutra" as the helpful components for sustain health for Triskandha viz. Satwa, atma and shaeera.

Kamala (NelumbonuciferaGaertn.) helps in vitiation of pitta dosha and has cooling effect by sheetaveerya. It helps in blood clotting, thus stops excessive and prolonged menstrual bleeding. As well as it act as haemostatic agent due to madhura and kashaya rasa. Presence of tannin shows coagulation property, presence of iron shows haematinic property. AcharyaVagbhata mentioned it as rasayana, hence it promotes strength, virility and intellect. Kamala seeds contain polyphenols, flavonoids, hyperin. These effectively scavenge free radicals and maintain the balance of reactive oxygen metabolism at cellular level as well as delay ageing of a uterine cell. Neferine has anti-cancer activities. It inhibits cancer cell proliferation by inducing apoptosis.Neferine induces autophagy of cancer cells via p38 MAPK/JNK activation.Kamala is also useful in heat created due to chemotherapy and radiotherapy.

Lotus leaves are used to treat hyperlipidemia& obesity. Aporphine alkaloids from the leaves of NelumbonuciferaGaertn have many pharmacological properties such as anti-diabetic, anti-obesity, anti-hyperlipidemia, anti-oxidant and anti-HIV activities[xviii].By anti-oxidant property of Kamala, it is known as free radical scavengers. Antioxidants neutralize free radicals, thus preventing them from causing uterine cell damage.

Presence of ironinKamala (Nelumbonucifera)shows hematinic property, which helps in correction of anemia. As the iron is essential for oxygen transport and respiratory enzymes activity.

Presence of anti-oxidants such as Vitamin A, C, E prevents ROS(Reactive oxygen species) production.

High risk for increased severity of HSV-1 (Herpes simplex virus type 1) infection in immune-compromised cancer state, it is proved to be interrupted by Nelumbonucifera[xix].

Lotus seeds are certified to be multiple functional compounds, such as polyphenols, protein, polysaccharides. Proteins and carbohydrates are the main nutrients of lotus seeds. Low fat content and good proportion of amino acids confer to lotus seeds unique nutritional values. The bioactivity of ingredients from lotus seeds includes anti-

oxidant activity, hypoglycemic, immune modulatory, anti-bacterial, anti-inflammatory, analgesic effects as well as gastro-intestinal regulation. These seed contains a rich variety of essential amino acids, unsaturated fatty acids, carbohydrates, vitamins, calcium, iron, zinc, phosphorous and other trace elements (Shad et al. 2013), they also have water-soluble polysaccharides, alkaloids, flavonoids, super-oxide dismutase (SOD) and other bioactive components, which delays ageing. Super-oxide dismutase (SOD) affects the scavenging of free-radicals, maintaining the balance of reactive oxygen metabolism, protecting film structure, and delaying organ ageing. The lotus seed cells maintain the oxygen balance to prevent cell membrane damage by oxidation, maintaining cell structure integrity and long term vitiality.

Lotus seed contents amylose starch at up to 40.20%. Lotus seed amylose starch effectively regulates the body's blood sugar solubility.

Proteins of lotus seeds- Lotus seed proteins are of high quality, rich in a variety of essential amino-acids, semi-essential amino acids and non-essential amino acids. Lotus albumin has the highest content (41.58%), followed by globulin (26.58%), gluten (18%) and gliadin (6%) (Tang et al.1998). According to amino acid score (AAS) and chemical score (CS), the first limiting amino acids of lotus seeds proteins are methionine and cysteine.

Carbohydrates of lotus seeds- The main available carbohydrates of lotus seeds are starch, polysaccharides (Zheng et al. 2003) and oligosaccharides (Tian et al. 2012a). Lotus seed is a high amylose food, with amylose content reaching 40.20% (Su et al. 2010). High amylose food is referred to as "Functional food". So, the lotus seed starch is an ideal food for high blood pressure, diabetes (Wu and Xiao 2013). Lotus seed's water- soluble polysaccharides have been shown to promote lymphocyte transformation and enhance the immune function (Sung et al.2011).

Micronutrients of lotus seeds- Vitamins of lotus seeds are complete and found in large amounts. The most represented are Vitamin B1, B2, B6, Vitamin C and Vitamin E, which have good physiological function (Zheng et al. 2003). Vitamin C found at up to 39.4 mg/kg in fresh lotus seeds; it's a strong anti-oxidant and can improve the body's immune system and stress coping ability.

Immuno-modulatory effects of lotus seeds- Lotus seed contain a variety of glycoproteins and active factors; they activate the human T, B and NK cells, and induce cytokines and the complement, enhancing immunity[xx].

Kamala in Garbhashayaarbuda acts on dosha which are increased, are brought to normal i.e. cause dosha- shaman. Due to kashaya rasa and sheetaveerya, it causes rakta-sangrahana means the administration of kamala cause coagulation of blood.AcharyaCharaka mentioned kamala in dahaprashamanmahakashya&AcharyaVagbhata mentioned it in dahagana.

Discussion:-

Kamaladescribed as vishanasanam property i.e. it has the potential to kill cancer cells, which is toxic for human body. By laghuguna of kamala it acts as ropana i.e. in healing of damage cell of body by viruddhaaharavihara. It is snigdha in property, so act as balyavarnakara. By picchilaguna of kamala, it acts as varnapeedana, balya&sandhanaproperty. Thus kamala helps in rejuvenation of a cell. In metrorrhagia of uterine cancer, it act as sangrahika[xxi] and thus stops heavy bleeding during menses. Thus prevents anemia as well as polycythemia. In garbhashyaarbuda, free radical develops. It includes, nitric oxide (NO), superoxide, hydroxyl radical, (OH-), H2O2. Nitric oxide (NO), superoxide anion, and related reactive oxygen species (ROS) play an important role as regulatory. Many of the ROS-mediated responses actually protect the cells against oxidative stress and re-establish "redox homeostasis." Kamala has immune-modulatory effect. Now- a-days physician have realized that the human body has immune mechanisms that protect against disease. Tumor cells by themselves may be poor antigen presenting cells and the absence of co-stimulatory molecules like B7 can lead to T-cell anergy or apoptosis[xxii]. But in uterine cancer,Lotus seed contain a variety of glycoproteins and active factors; they activate the human T, B and NK cells, and induce cytokines and the complement, enhancing immunity. Thus, the Kamala i.e. Nelumbonucifera can be act as best immunotherapy agent in prevention as well as for management of uterine cancer hence to provide quality of life and to increase span of life.

Conclusion:-

Garbhashayaarbuda is a common gynecological condition among young women of reproductive age and is associated with distressing and life threatening symptoms. Due to the limitations of Modern science, Ayurveda has a great scope in thisfield. It becomes the necessity of the time to find out an efficacious and harmlesstherapy to manage the condition. Kamala (NelumbonuciferaGaertn.) helps in vitiation of pitta dosha and has cooling effect by sheetaveerya. It helps in blood clotting, thus stops excessive and prolonged menstrual bleeding. As well as it act as haemostatic agent due to madhura and kashaya rasa. Presence of tannin shows coagulation property, presence of iron shows haematinic property. It act as rasayana, hence it promotes strength, virility and intellect.These effectively scavenge free radicals and maintain the balance of reactive oxygen metabolism at cellular level as well as delay ageing of a uterine cell. Neferine has anti-cancer activities. It inhibits cancer cell proliferation by inducing apoptosis. These are the factors why the topic is beingselected.

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References:-

[i]Atombosoba A. Ekine, Lucky O. Lawani et al., Review of the clinical presentation of uterine fibroid and the effect of therapeutic intervention on fertility, American journal of clinical medicine research, 2015, vol.3,no. 1, Pp-9-13.
[ii]Aamir T Khan, ManjeetShehmar et al. – Uterine fibroids: current perspectives-International journal of women's health.
[iii] https://www.who.int/macrohealth/action/NCMH_Burden%20of%20disease_(29%20Sep%202005)pdf
[iv]Dr.BrahmanandTripathi, Carakasamhita elaborated by Caraka and Drudhabala edited with „CARAKA-CHANDRIKA" Hindi commentary, ChaukhambaSurbhartiPrakashan, Vol II.
[v]SusrutaSamhita by KavirajAmbikaDuttaShastri, Chaukambha Sanskrit Sansthan, Varanasi.
[vi]SusrutaSamhita by KavirajAmbikaDuttaShastri, Chaukambha Sanskrit Sansthan, Varanasi, Nidanasthana 11/16-17.
[vii]Jeffcoate"s principles of gynecology, 8th international ed. 2014, Jaypeebrothers medical publishers (p) LTD. Pg.169, 170, 171.
[viii]Chi-Ming Liu, Chiu-Li Kao et.al, Anti-oxidant and anticancer aporphine alkaloids from the leaves of NelombonuciferaGaertn. Cv. Rosa-plena, Molecules, 2014.
[ix]Dr.BrahmanandTripathi, Carakasamhita elaborated by Caraka and Drudhabala edited with „CARAKA-CHANDRIKA" Hindi commentary, ChaukhambaSurbhartiPrakashan, Vol II.
[x]HariharprashadaTripathi, Haritasamhita, Chaukambhakrishnadas academy, Varanasi, Verse 37/1,2.
[xi]Jeffcoate"s principles of gynecology, 8th international ed. 2014, Jaypeebrothers medical publishers (p) LTD.
[xii]SusrutaSamhita by KavirajAmbikaDuttaShastri, Chaukambha Sanskrit Sansthan, Varanasi, Shareerasthana 2/23.
[xiii] https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/020011s040lbl.pdf
[xiv] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5683444/
[xv] https://m.acog.org/Patients/FAQs/Uterine-Fibroids
[xvi]Jeffcoate's principles of gynecology, 8th international ed. 2014, Jaypeebrothers medical publishers (p) LTD.
[xvii]Dr.Sadanand P. Sardeshmukh; Handbook on cancer &ayurved, Ed.1st, 2016, BSDT, Wagholi, Pune.
[xviii]Chi-Ming Liu, Chiu-Li Kao et.al, Anti-oxidant and anticancer aporphine alkaloids from the leaves of NelombonuciferaGaertn. Cv. Rosa-plena, Molecules, 2014.
[xix]Yuh-Chi Kuo, Yun-Lian Lin et.al- Herpes simplex virus type 1 propagation in HeLa cells interrupted by Nelumbonucifera, Journal of Biomedical Science (2005).
[xx] Yi Zhang, Xu Lu et al- Nutritional composition, physiological functions and processing of lotus (NelumbonuciferaGaertn.) seeds: a review, Phytochem Rev (2015).
[xxi]Dr.BrahmanandTripathi, Carakasamhita elaborated by Caraka and Drudhabala edited with „CARAKA-CHANDRIKA" Hindi commentary, ChaukhambaSurbhartiPrakashan, Vol I, Sutra sthana 25th adhyaay..
[xxii]Jeffcoate"s principles of gynecology, 8th international ed. 2014, Jaypeebrothers medical publishers (p) LTD.