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Ovulation induction by ayurvedic medicines: a review.

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ABSTRACT

Though population growth is a global dynamic problem of the world today even the cases of infertility are raising their steps due to changed life style. Four essential factors for conception mentioned by ancient Ayurveda scholar Sushruta are as imperative today as they were. Ovum is one among these essential factors as far as female aspect is concerned. Vitiation of *Vata* reflects ovulatory dysfunction which contributes about 40% of female infertility in present era. Numerous classical formulations are mentioned by Ayurveda scholars for the management of infertility however it is not evidently mentioned that which formulation acts upon which particular factor. Infertility is major health problem. The rate of infertility is steadily increasing due to change in life style. High pollution, socioeconomic cause, enormous amount of stress. Majority of these cases could be treated either by hormonal therapy or by surgical intervention. Clomiphene citrate, hCG, hMG therapy used for ovulation induction causes side

effects like dangerous ovarian hyperstimulation syndrome, G.I.disturbances, dizziness, headache etc. Also this therapy is too much costly. So need to point out ayurvedic medicines for ovulation induction. Ovulation disorder is the most common female infertility factor. In Ayurveda it is mentioned as one of the four essential factors for conception apart from *Ritu* (season), *Kshetra* (field or female reproductive system) and *Ambu* (water or nourishing substance). It is the *Bija* (seed) which yields the *Garbha* (pregnancy). The absence of this *Bija* in women is termed as anovulation, which contributes about 40% of female infertility. As hormonal therapy used to treat anovulatory cycle for ovulation induction has much more side effects so this subject is chose for study.

KEYWORDS- Infertility, Anovulation, Ovulation induction, Clomiphene citrate, Hcg, Hmg.

INTRODUCTION-

Ayurveda describes four essential factors i.e. *Rutu* (fertile period), *Kshetra* (healthy

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reproductive organs), *Ambu* (proper nutrient fluid) and *Bija* (ovum / sperm) are responsible for the formation of *Garbha* in comparison to germination of a seed^[1]. Defect in any one of them can cause *Vandhyatva* (infertility). Among these four factors, *bija* (seed) is directly related to ovulation process. Absence of this *bija* in women is termed as anovulation. The main reason for anovulatory cycles is vitiation of *Artava* (Afflicting menstrual / ovulatory phase); and vitiated *Artava* does not possess *Bija* (ovum)^[2]. Anovulatory cycles have become a life style disorder. Irregular dietetic and behavioural habits results into *Dosha* vitiation and mal-absorption which lead to *Margasyaavarana* (obstruction), then results *Rasa / Rakta dosha*. It's one among the symptom is *Artava Kshaya* (diminished menstrual fluid). This can be *drusya rupa* (visible) or *bija rupa* (invisible). Due to *dhatu kshaya* (diminished tissue element) and *margasya avarana* (obstruction of passages), *vata* aggravates along with *pitta, kapha* reaches to srotases (channels) inturn results different disorders and *rasadi dhatu sosha*^[3]. *Kshina artava dushti* (diminished menstrual phase) caused by *vata* along with *pitta*^[4]. Due to obstruction in the passages of *doshas, artava* (menstrual phase) is destroyed in women^[5]. Delayed menstruation or non-appearance of menstruation at appropriate time, scanty menstrual blood and pain in vagina (*yonivedana*) are the symptoms of *kshina artava* (diminished menstruation / ovulation)^[6]. Scanty bleeding is one among

the symptoms of Polycystic ovarian disorder in which ovulation will not occur^[7]. Ovulatory factor accounts 26 to 44% in cases of female infertility. Hormonal therapy used for ovulation induction is much costly and having so many side effects. Therefore need to point out ayurvedic medicines for ovulation induction. There are naturally found herbs which not only helps in restoring the hormonal balance of the body but are also very beneficial in inducing ovulation. These herbs are not addictive and do not cause any side effects.

Review-

Nirgundi (Eng- Chasteberry, latin -*Vitex agnus*)- This is one of the most effective herbs for increasing ovulation. It helps to normalize pituitary gland which produces sex hormones such as estrogen, progesterone and testosterone. *Vitex* balances the female hormone and helps to increase ovulation frequency. This herb may be consumed in the form of tea, powder, tincture or liquid extract. The benefits of the herb are noticeable after 2 to 3 months of continuous use.

Gauriphala (Eng-Red raspberry, latin-*Rubus idaeus*)- It is considered as a fertility promoting herb. It contains fibres which regulate blood vessels and prevent insulin. This increases ovulation and fertility. This herb tones the reproductive organs. It is best to use this herb in combination with peppermint.

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Green tea (Latin-Camellia sinensis)- It is another effective herbal remedy to induce ovulation. It is a powerful antioxidant which improves reproductive health. This herb stimulates the sex hormone called binding globulin. This helps to lower estrogen and androgen in body and also induces ovulation.

Evening Primrose Oil (Latin- Uenothera biennis)- It contains essential fatty acids such as linoleic acid and gamma-linoleic acid which balances female reproductive hormones and also helps to lubricate the mucous membrane. It increases the quality of cervical fluid, which improves the longevity of sperm in the female reproductive tract. Take evening primrose oil from inception of menstruation to ovulation to increase fertility.

Atasi (Eng-Flaxseed, Latin- Linum usitatissimum)- It is another powerful herbal remedy for ovulation. It contains lignans which balances hormones within the body and regulates the reproductive cycle.

Vrishchikali (Eng-Nettle leaf, Latin- Urtica dioica)- It is one amongst the most effective herbs for ovulation. It is rich in antioxidants and calcium which affects woman's ability to conceive. This herb is also rich in vitamins A, C, D and K, potassium, phosphorous, iron and sulphur. Consuming nettle leaf helps to ensure good reproductive health.

The herb (Eng-false unicorn root, Latin-Chamaelirium luteum) regulates menstrual cycle and balances sex hormones. It improves the secretory response of ovaries which promotes ovulation. This herb also tones the uterus and ovaries. You may consume false unicorn root in the form of decoction or liquid tincture. This herb restores irregular menses and balances hormonal function and acid-alkaline level of vagina. It contains isoflavones which enhances fertility^[8].

Ovulation problems caused due to polycystic ovarian syndrome (PCOS) can be treated with *Latakaranj* (Caesalpinia crista), *Varun* (Crataeva nuevula), *Kanchnaar* (Bauhinia variegata) and *Guggulu* (Commiphora mukul). Ovulation disorder can be cured by using *Chandraprabha Vati*, *Yograj Guggulu*, *Ashokarishta* and *Dashmoolarishta*. Herbal medicines useful in this disorder are: *Ashoka* (Saraca indica), *Dashmool* (Ten Roots), *Shatavari* (Asparagus racemosus), *Aloes* (Aloe vera), *Guggulu* (Commiphora mukul), *Hirabol* (Commiphora myrrha) and *Harmal* (Paganum harmala)^[9].

Pippalyadi Yoga (Combination of *Piper longum* Linn, *Zingiber officinale*, *Piper nigrum* Linn and *Ochrocarpus longilolius* Benth. & Hook.f. in equal quantity) is mentioned by Scholar Chakradatta while quoting treatment of infertility. *Pippalyadi Yoga* was given in the dose of 4 gm before meal orally twice a day for 2 months after stoppage of menstruation. Appetizer,

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digestive and carminative properties of *Pippalyadi Yoga* along with this, rejuvenating property of ghee decrease sharp quality of formulation. By virtues of these, it removes obstruction and so as to proper functioning of *ApanaVata*. Time of ingestion of medicine was before meal which is best time for the management of vitiation of *ApanaVata* which is the prime causative factor behind anovulation ^[10].

It may be also possible the drug given by the intra-uterine route may stimulate the receptor and corrects its function means *Beejotsarga* i.e. Ovulation. *Tikta rasa* of *shatapushpa* causes *rasraktashodhana, agnideepana* and *amapachan*. *Katurasa* of it helps in *rutupravartan, yonishukravishodhana. ushn* a *virya* of *shatapushpa* works as *vatashamaka*. *Madhura rasa* of *shatapushpa* acts as *sthanik balya* and *pittashamana*. *Tikta rasa* of *shatavari* causes *rasrakta shodhana, agni deepana* and *amapachan*. *Madhura rasa* of *shatapushpa* acts as *sthanik balya* and *pittashamana*. *Shatapushpa* and *Shatavari* is a phytoestrogen, it exerts both estrogenic and antiestrogenic activity. It acts in both high oestrogenic and low oestrogenic condition. Thus it increases the endometrial thickness. Both drug induces the ovulation & increases follicular size because *Shatapushpa tail* & *Shatavari tail uttarbasti* directly act on uterus HPO axis. *Shatapushpa* and *Shatavari* both are contains natural phytoestrogen therefore its increases endometrial thickness &

menstrual flow. The formulation proves to be an Cost effective, Herbal, Safe treatment for anovulatory menstrual cycle ^[11].

***Paeonia lactiflora* (white peony) -** *Paeonia lactiflora* has been used for gynecological conditions by both Chinese and Western herbalists, and is used by Western herbalists for PCOS, hyperprolactinemia, endometriosis, ovarian failure and androgen excess. *Paeonia* has been shown to positively influence low progesterone, reduce elevated androgens (testosterone) and acts to modulate estrogen and prolactin (Trickey 1998). In vitro the active constituent paeoniflorin has been shown to affect the ovarian follicle by its action on the aromatase enzyme (Ota 1998). Aromatase is important for follicle maturation, ovulation and corpus luteum function, steroid hormone synthesis and the regulation of the conversion of androgens to estrogens. The biofeedback in the pituitary and hypothalamus relies on aromatase to regulate prolactin and GnRH. The daily dose for *Paeonia* is 4.5 mL to 9 mL of a 1:2 dried plant extract (Bone 2003).

***Vitex agnus-castus* (chaste tree)-** *Vitex agnus-castus* is beneficial for ovulatory factors associated with PCOS; in particular it has been shown to downregulate the production of excess prolactin, a condition known as hyperprolactinemia. *Vitex* is also postulated as having antiandrogenic properties (Mills 2000).

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Hyperprolactinemia is related to adrenal stress and hyperinsulinemia in PCOS. It is well documented that the active constituents in *Vitex* demonstrate a dopaminergic activity and dopamine inhibits the production of prolactin. The dopaminergic compounds in *Vitex* have been identified as the diterpene, including rotundifuran and 6 β ,7 β -diacetoxy-13-hydroxy-labda-8,14-diene. Other constituents of *Vitex* include essential oils, flavonoids (such as casticin) and iridoid glycosides (including aucubin and agnuside) (Bone 2003, Merrily 2002). Hyperprolactinemia, or the more subtle condition of latent hyperprolactinemia, is one of the most frequent causes for cyclical disorders, including corpus luteal insufficiency. This can lead to premenstrual syndrome (PMS) and progesterone deficiency, secondary amenorrhea and premenstrual mastalgia (De Cherney 2003). In an uncontrolled study, *Vitex* reduced elevated prolactin levels in 80% of women with hyperprolactinemia at a dosage of 30-40 mg per day for one month and improved symptoms of a variety of menstrual disorders including secondary amenorrhea, cystic hyperplasia of the endometrium, deficient corpus luteum function, metrorrhagia, polymenorrhea and oligomenorrhea (Bone 2003). *Vitex* reduced the thyroxin releasing hormone (TRH)-induced prolactin release (essentially a pituitary thyroid axis problem), normalised shortened luteal phases, corrected luteal phase progesterone

deficiencies and reduced PMS symptoms in women with luteal phase defects due to latent hyperprolactinemia (Bone 2003). *Vitex* should be considered a first line botanical therapy for hyperprolactinemia and given for the duration of at least 3 to 6 months. In herbal writings *Vitex* is often attributed to increasing LH, which is not desirable in PCOS. However clinical experience has shown that it is valuable in PCOS, especially when combined with other herbs, probably because of its action in reducing prolactin. The daily dose of *Vitex* is 1-4 mL of a 1:2 dried plant tincture or 500-1000 mg of dried berries daily (Bone 2003). It is best taken as a single dose in the morning (Bone 2003) [12].

Shilajit (latin – Asphaltum) possesses a good deal of variability naturally based on growing conditions. used in Ayurveda medicine as a vitality enhancer and Adaptogen compound with historically 'miraculous' effects. Possibly because of these effects reported to it, it was named Shilajit. Fulvic Acid, seen as the main bioactive component. In female rats fed 25, 50, and 100mg/kg *Shilajit* daily for 6 weeks, *Shilajit* was associated with more rats in estrus and thought to have stimulating properties on oocytes and ovulation frequency [13].

In this study patients were subjected to *phala kalyana ghrutam pichu* (medicated tampon at vaginal cervix) for five days after cessation of menstrual bleeding followed by *sahacharadi tailam*

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matravasti (medicated enema) for five days. Both procedures were done one after one for three cycles. *Bhumyamalaki* (*Phyllanthus urinaria* Linn.) (1000 mg of whole plant extract) in tablet form one tablet oral & *Jyotishmati* (*Celastrus panniculatus* Willd.) (500 mg of leaves powder) in capsule form, one capsule oral - both given twice daily for 15 days after cessation of menstrual bleeding for three cycles. Proper *pathyapathya* (congenial and non-congenial), *ahara* (diet), *vihara* (behaviour) were suggested along with medication. Occurrence of normal menstrual flow, regularization of menstrual cycle, occurrence of ovulation was noted significantly. Retention of medicated drug with the medical properties of ingredients either in the rectum and pelvic colon or at vaginal cervix absorbs in tissue, eradicates *dosha*, nourishes / stimulate the local plexus and activate the viscera to function properly. The combined effect of drugs *Sahacharadi tailam*, *Phalakalyana ghrutam*, *Bhumyamalaki* and *Jyotishmati* is very effective in management of *artava kshaya* through resulting regular menstrual cycles, normal flow and ovulation^[14].

Ayurveda offers effective treatment for Anovulation. For the growth of the follicle, *Nagakesara Churna* should be mixed with Tea and taken twice a day. *Kanchana Guggulu*, *Ashokadivati* tablets effectively cure the ovulation problems. Hormonal imbalances can be reduced by taking *Kumarya Rasam*, *Ashokarishta* syrup

thrice daily. In some women ovary will be very healthy but ovulation is delayed. *Phalaghurutam*, *Phalakalyana Ghrutam* are the medicines that give effective results in these conditions^[15].

Drug through nasal route reaches the *Shringataka Marma* (*Siro Antarmadhyam*) and spreads through nose, ear, eye, and tongue into *Shira* (head) eliminate morbid *Doshas* and ultimately promotes the normal physiological function. *Narayana Taila Nasya* may stimulate olfactory nerves and limbic system, which in turn stimulates hypothalamus leading to stimulation of Gonadotropin Releasing Hormone (GnRH) neurons, regularizing GnRH pulsatile secretion, leading to ovulation. Phytoestrogenic or oestrogenic property of different components of *Narayana Taila* like, *Shatavari* (Latin-*Asparagus racemosus*), *Tila Taila* (Latin-*Sesamum indicum*) regulates neuropeptide Y activity, which in turn regulates the activity of gonadotropin secretion. *Matra Basti* given through *Guda* (rectal route) normalizes *Apana Vayu* leading to *Vatanulomana* and physiological functioning of *Vata*, which may help in turn for the extrusion of ovum from the follicle and ovulation. *Basti Dravya* spreads all over the body, pacifies the aggravated *Dosha* along with *Vyana Vayu* leads to *Samyaka Rasa Raktadi Dhatu Nirmana*. *Sukshma Bhaga* of *Rasa* reaches the *Beejagranthi*, which regularizes the *Beejotsarga* with the help of normal *Apana Vayu*. *Matra Basti* after

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absorption reaches into systemic circulation and the concept of Central Nervous System (CNS) resembles Enteric Nervous System (ENS) the endogenous opioids in the ENS specially endorphins (β -endorphin) are influenced which will affect GnRH release regularizing HPO axis regulating ovarian cycle and ovulation. Endogenous opioids are a group of peptides, which play an important role in the ovarian cycle through the inhibitory effect on GnRH secretion. Other pituitary hormones are also modulated by opiates. β -endorphin has been best known of the opioid related to the reproductive system regulating variety of pituitary hormones including gonadotrophins. β -endorphin has a role in the regulation of the normal ovarian cycle ^[16].

RESULT- Studies indicate that there are so many Ayurvedic medicines which induces ovulation. It also appears to exert a positive influence on vital systems of the body. Studies also show that these formulations are safe.

DISCUSSION - Infertility is a relatively common problem, it is estimated that at anytime, approximately 10% of those who wish to have children can be considered infertile and about 30 to 40% of them present with ovarian dysfunction. Vitiations of dosha in anovulation is important and depends upon the pattern of digestive power. Irregular digestion directly supports the vitiations of Vata, while weak digestion suggests the vitiations of Kapha . Both of these have affected the patients. It

shows the *Vata-Kapha* dominance in infertility caused by anovulation. Digestive power is the prime factor of whole the *Doshic* vitiations and pathogenesis of disease. Hence, the findings related to digestive power are significant in anovulatory factor of infertility. The modern research reveals that stress disturbs the normal hormonal regulation and it decreases the LH secretion, which ultimately leads to anovulation patients of weak mental stamina are more susceptible to stress which creates hormonal disturbances that leads to anovulation. An appetizer, digestive and carminative property of ayurvedic formulations removes obstruction and so as to proper functioning of *ApanaVata*. Time of ingestion of medicine was before meal which is best time for the management of vitiations of *ApanaVata* which is the prime causative factor behind anovulation. Number of medicines mentioned in Ayurvedic classics for the management of infertility is found to be effective treatment modality in anovulation.

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