

CLINICAL STUDY OF AC-4-AN AYURVEDIC COMPOUND PREPARATION AS AN ORAL CONTRACEPTIVE

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ABSTRACT: In this paper the contraceptive effect of Ayush AC-4 an ayurvedic compound preparation is assessed. Totally 281 volunteers have been enrolled in the study. The menstrual cycles covered by the women ranged from 1-30. The result is moderately satisfactory. No toxic symptoms or severe side-effects were noticed. The authors say that in the light of the results obtained in this study, it may be desirable and feasible to make this compound preparation acceptable like the other oral contraceptives.

Introduction:-

The problem of population of growth has been recognised the world over. While the population of more developed countries increased by 60% during the period 1920 and 1970 and of developing countries by 111%, India's population during the same period, rose by 120% i.e. 231 millions in 1920 to 540 million in 1970.

Adoption of measures to limit the family is almost a norm in the present times. When there are more than 2 children, especially if one or more of them are boys, the parents go in for permanent sterilisation, either vasectomy or tubectomy. Some males use the condom and some females the I.U.D. though both these measures are not so popular. The rest of them express a desire to use oral contraceptive tablets. But many women cannot tolerate this and are prone to be agitated over the side effects. The administration of highly potent drugs like oestrogen and progesterone in young persons for prolonged periods is presenting to medical profession a new problem of adverse reactions and toxic manifestations. With increased awareness of fertility control to solve the population

explosion, the problem is touching unlimited bounds. The search for cheap, effective, acceptable, safe and easily administrable oral non-harmonal contraceptives has led the scientific workers to explore several drugs of indigenous systems of India.

Vidanga (*Embelia ribes*) is one Ayurvedic herb and is mentioned as having contraceptive effect in texts¹. Arora et al (1971)² have reported that the aqueous extract was very effective. It checked implantation in almost all the animals. Thus the anti-fertility activity of the drug is probably due to its anti-oestrogenic property. A similar mode has been reported by Gudibanda (1968)³. The action of oestrogen on the uterus which is essential for implantation is antagonised by the drug. Hence an unfavourable environment is created in the endometrium checking nidation. Radhakrishnan and Alam (1975, 1976)^{4&5} and Rathinam et al(1976)⁶ have also reported that embelin isolated from *Embelia ribes*(Burn) possesses anti-implantation activity in female albino rats.

Clinical trials with this drug have also shown moderately encouraging results. Jhaveri(1970)⁷ and Shah(1971)⁸ tried the

aqueous extract of embelia ribes labelled as Maswin tablets on 56 fertile women in the age group of 25-42 years covering 588 menstrual cycles. The dose employed was 400 mgs/day for 10 days commencing from the 5th day to 14th day of menstruation. No pregnancy occurred in any of the women during the period of the study. There were no side effects. There was a sense of well being and regularity of menstruation was established. Tewari(1977)⁹ et al tried this drug in 2 groups of different doses and duration of administration. In the group where the drug has been administered for slightly prolonged period, the percentage of protection from conception offered is much better than in the other group. Tewari and Chaturvedi(1971)¹⁰ have tried a compound containing Embelia ribes, piper longum Linn(Pippali) and Borax (TANKANA) and obtained a not much encouraging result. However the period of treatment was only 4 days.

Laksha(Laccardia lacca) another ayurvedic drug, administered orally (100 mg/kg) was found to prevent implantation in almost all the animals¹¹, when it was administered from day 1st to 5th, post coital.

Kramuka(Areca catechu Linn) is another ayurvedic drug found to have anti-fertility activity. The alcoholic extract of the nuts exerted distinct oxytocic effect on isolated rat uterus (Garg & Garg 1970)¹². The petroleum ether and aqueous extract of nuts were found to have encouraging anti-fertility activity in rats (Garg & Garg-1971)¹³.

The use of Aśoka (Saraka indica Linn) in uterine disorders has been widely mentioned in various ayurvedic texts (Suśruta Samhitā, Cakra-datta etc.). The bark of the tree is mainly used. Adhya and Roy (1940)¹⁴ reported well marked oxytocic activity in extract Ashok liquidum. Powerful uterine spasmodic activity was reported by Chaturvedi et al (1968)¹⁵ in case of

Asokāriṣṭa, a compound indigenous preparation containing Saraka indica as the main ingredient. This is further confirmed by the studies of Sathyavati et al (1969)¹⁶.

In the present study, the efficacy of a compound preparation, comprising the above mentioned 4 drugs which have been found to have anti-fertility activity is assessed.

Materials and Methods:

Subjects

Married women of proven fertility and of child bearing age in the age range of 15-40 years are selected for this study. All of them had one or more pregnancies. They were living with their husbands and leading an active sexual life throughout the period of study. The women are chosen from those attending the Corporation Health Centres, Family Planning clinics of the Hospitals and also motivated by the Field Attendant on her door-to-door canvassing. Totally, 281 volunteers have been enrolled in the trial. Of these, 102 women come under the age group of 25 to 29, 71 under 20 to 24 and 64 under 30 to 34, so that 84% belong to the age group of 20 to 34. 91 Women have more than 4 children, 45 have 4 children, 47.3 children, 58.2 children and 40 have one child. Of these, 80 women are illiterates and 88 have studied upto primary school. 262 women are housewives. The income per capita per month for 67 women is below Rs. 25/-, for 111 women from Rs. 25/- to 50/-, 54 from Rs. 50/- to Rs. 75/-. 257 women have regular menstrual cycles (26-30 days) with the duration of period ranging between 3-5 days. The inter-pregnancy interval for 125 women is one year, 61 within one year, 50, 2-3 years.

Drug Administration:

The Ayurvedic compound consists of 4 drugs. 1. Vidanga (Embelia ribes) 2. Aśoka (Saraka indica) 3. Lākṣā (Laccardia lacca) 4. Kramuka (Areca catechu) in equal parts.

The drug is to be taken for 15 days from the 4th day of menstrual cycle to 18th day (taking the day on which menstruation commences as the first day) in the dosage of 1 gm/day in 2 divided doses after food, the total dosage being 30 tablets for one menstrual cycle. There was no other medication for the rest of the cycle.

Parameters of Assessment:

Results are considered positive and satisfactory by the appearance of menstrual flow and non-pregnant uterus, and negative and unsatisfactory by amenorrhoea and pregnant uterus.

Conduct of the Study:

The team consists of one Lady Medical Officer, Social Worker and a Field Attendant. The team goes to the field to enroll volunteers for inclusion of the volunteers in the trial. The field attendant goes to the field daily and collects information about the side effects etc. The regular consumption of the tablets is checked up periodically by the method of catch-at-count. A thorough clinical examination including vaginal examination is done to rule out any systemic disease.

Results and Discussion

From Tables I and II, it is seen that the incidence of pregnancy due to drug failure is greater within 10 cycles. The overall failure rate is not very high when we consider the fact that even in modern oral contraceptives, the protection offered from conception is somewhat less within the initial 3 cycles as compared to the subsequent cycles. Hence, we can conclude safely that the drug compound in the dose and period of treatment adopted in the present study, has given a moderately encouraging result. There is however some scope for improving the composition, dose or period of treatment so as to achieve still better results.

Table II shows the side effects observed. The side effects were not so severe as to warrant discontinuation of the drug and

mostly observed within 3 months only. Of the 37 women who complained of various side effects, only 6 women dropped out of the trial because of the side effects.

Table III shows the analysis of drop-outs. The percentage of drop outs is 90% as against 10% of active cases. Since the predominant majority of women were of low socio economic and educational status, the drop-out rate was also high.

Of the four drugs of this compound, Vidanga is well known as a Contraceptive drug. It has been prescribed to be taken during Rtu samaya. What is the Rtu samaya? Whether it indicates the period of fertility say 4th to 15th day of menstruation or the days inclusive of first four days or first four days alone is to be considered while evaluating contraceptive effect of an ayurvedic drug.¹⁷

Though there is a large number of drop-outs, still the cause of drop-out is not certainly due to drug failure. It is noteworthy that after 10th cycle, drop-out due to drug failure is almost nil. Absence of side effect after 10th cycle also is noteworthy. The compound AC-4 has a definite contraceptive effect but requires modification of dose and duration of administration in the light of the experience gained.

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TABLE I
Contraceptive Efficacy of the Drug

Cycles completed	No. of women	Pregnancy due to		Active cases	Drop-outs
		Drug Omission	Drug failure		
0-9	261	41	15	26	179
10-19	14	5	0	2	7
20-30	6	1	1	1	3
TOTAL	281	47	16	29	189

TABLE II
Further break-up-Contraceptive Efficacy of the Drug

Cycles completed	No. of women completing the cycle	Pregnancy due to drug failure
0-3	199	4
4-6	42	7
7-9	20	4
10-12	7	0
13-15	2	0
16-18	4	0
19-21	1	0
22-24	2	0
25-27	2	1
28-30	2	0

TABLE III
Side Effects

Months of Exposure	Dizziness	Allergic Reactions	Abdominal Pain	Pain in the limbs	Chest Pain	Dysentery	White discharge	Profuse bleeding	Loss of appetite	Gastritis
1-3	7	2	10	1	4	2	6	-	1	1
4-6	-	-	-	-	-	-	-	3	-	-

TABLE IV

Analysis of drop-outs

Side Effects	Disinclination	Left the area	Husband's objection	Wants another child	Adopted another contraceptive method	Irregular intake	Miscellaneous
6	124	17	20	10	4	5	2

REFERENCES

- Bhāva prakāśa. Madhyamakhaṇḍa, Yoniroga, sl: 33.
- Arora R. B. Ghatak, N. and Gupta, S. P. Antifertility activity of Embelia Ribes. Jour. Res. Ind. Med. 1971, 6, 2, p. 107-10.
- Gudibanda, K. K. Studies on the Oestrous Cycle of Rat. 1968. A Thesis.
- Radhakrishnan, N. and Alam, M. Indian Journal of Experimental Biology. 1975, 13, p. 70.
- Radhakrishnan, N. and Alam, M. Anti-Oestrogenic action of Embelin. Jour. Res. Ind. Med. Yoga and Homoeo. 1976, 11, 3, p. 115-116.
- Rathinam, K. Shanthakumari and Ramiah, N. Studies on the antifertility activity of Embelin. Jour. Res. Ind. Med. Yoga and Homoeo. 1976, 11, 4, p. 84-90.
- Jhaveri, C. L. Personal communication. 1970.
- Shah, N. K. A study of an indigenous drug, Maswin as an oral contraceptive, Current Medical Practice, 1971, 15, p. 614-16.
- Tewari, P. V. Sharma, S. K. and Basu, K. The 'K' tablets as an oral contraceptive agent. Jour. Res. Ind. Med. Yoga and Homeo. 1977, 12, 2, p. 112-17.
- Tiwari, P. V. and Chaturvedi, C. Clinical trial of an indigenous drug compound as oral contraceptive agent. Jour. Res. Ind. Med. 1971, 6, 2, p. 202-04.
- Ghosh, D. Anantharaman, M. and Shetty, B. M. V. Antifertility activity of indigenous medicine "Laksha" (Laccardia lacca). Bulletin of Medico-Ethno-Botanical Research, 1980, 1, 1, p. 107-113.
- Garg, S. K. and Garg, G. P. A preliminary report on the smooth muscle stimulating property of some indigenous plants on isolated rat uterus. Bull. P. G. I. Chandigarh. 1970, 4, p. 162.
- Garg, S. K. and Garg, G. P. Antifertility effects of Araca catechu Linn. and Carica papaya Linn. in female albino rats. Indian J. Pharmac. 1971, 3, p. 23.
- Adhya, P.C. and Roy, R.B. J. Indian, Med. Ass. 1940, 9, p. 299.
- Chaturvedi, C. Tewari, P. V. Satyavati, G. V. and Prasad, D. N. Investigations on the uterine activity of certain indigenous compound preparations. Nagarjun, 1968, 11, p. 621.
- Satyavati, G. V. Prasad, D. N. Sen, S. P. and Das, P. K. Investigations with the uterine activity of Saraca indica Linn. (Ashoka) Jour. Res. Ind. Med. 1969, 4, 1, p. 37-45.
- Venkataraman, S. and Sundaresan, T. P. A short note on contraceptives in Ayurveda. Jour. Sci. Res. Plan. Med. 1981, Vol. 2. No. 1 & 2. p. 39-42.