

## EFFECT OF TOBACCO, PAN MASALA AND BETEL LEAF CONSUMPTION ON SEMEN QUALITY

PANKAJ DESAI ● MALINI DESAI ● MAYA HAZRA

### SUMMARY

A matched controlled study was carried out on semen samples of 386 individuals, for the possible effects that tobacco chewing smoking, betel leaf chewing and paan masala consumption may exert on the quality of the semen. It was found that neither the semen volume, sperm density/ml., sperm motility nor morphology of sperms were distinctly affected by consumption of these agents.

### INTRODUCTION

"Tobacco consumption is injurious to health" so scream all advertisements of tobacco products. Health hazardous habits like tobacco chewing, smoking, pan masala consumption (with or without tobacco) or betel leaf chewing with all its fancifull ingredients are rampant in Indian society. Many workers have worked on tobacco and its effects on semen and at times taken diametrically opposite stands. Workers like Rodriguez-Rigan et al (1982) have shown no effect of tobacco on semen. On the other hand Handlemann et al (1984), Evans et al (1981) and Shaarawy and Mahmoud (1982) have shown hazardous effects of these agents on semen quality. The

aim of this work is to find some answer to this controversy through a controlled study. Pan masalas (without tobacco) and betel leaf chewing (without tobacco) are added habits studied herein and an attempt has been made to find an answer to this query as to whether they affect the semen quality.

### MATERIAL AND METHODS

This study was carried out in the Dept. of Obst. & Gynec., Medical College and SSG Hospital, Baroda wherein semen reports of male partners of couples coming for treatment of infertility were studied. This is an analysis of 5 yrs. from July 1987 to June 1992. Semen reports of males enrolled in this study were analysed for count, motility, semen volume and sperm morphology. The subjects selected were those between age group of 25-35 yrs.

*Dept. of Obst. & Gyn., Medical College & SSG Hospital, Baroda.*

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Those with consistently regular habits of consuming tobacco in any form, pan masala or betel leaf consumption were studied. Occasional consumers of any of these agents were not included in the study. Also those with known conditions affecting semen like varicocele, cryptorchidism, systemic diseases etc. were also not included in the study. Thus, they were all seemingly normal healthy males with an additional habit specified above.

The reports of consumer groups were compared with the non-consumers, the latter serving as controls. Results were analysed

with the standard students' and therefore  $P < 0.05$  was considered as significant.

### RESULTS

Interesting results emerged from this study. The total number of males studied were 386. Of these, 52 were tobacco chewers which included pan masala with zarda for 6 months to 8 years (mean 3.5 years), 9.6 were smokers for 2 months to 11 years (mean 4.6 years), 68 were paan masala consumers (plain without zarda) for 1 year to 9 years & 3 months (mean 3.3 years) were betel leaf chewers with all its fanciful

Table I

#### Age and Period of Infertility

	Tobacco chewers	Smokers	Paan Masala consumers	Betel Leaf chewers	Non-consumers
Age (in yrs)	26.33 ± 0.31	27.02 ± 0.08	25.89 ± 0.91	26.17 ± 0.61	26.26 ± 0.14
Period of Infertility (in yrs.)	3.6 ± 0.11	4.02 ± 0.26	4.2 ± 0.16	3.88 ± 0.14	4.16 ± 0.27

Values indicate : Mean ± S. E. M.

Table II

#### Semen Parameters

Parameters	Tobacco chewers	Smokers	Paan Masala consumers	Betel Leaf chewers	Non-consumers
Semen Volume (in c. c.)	2.18 ± 0.16	2.62 ± 0.18	2.42 ± 0.26	2.34 ± 0.17	2.61 ± 0.18
Sperm Count (m 11/ml)	61.26 ± 2.98	62.66 ± 3.1	66.4 ± 2.8	58.5 ± 3.25	60.1 ± 3.4
Sperm Motility (%)	56.61 ± 2.76	53.12 ± 3.24	58.8 ± 1.1	60.04 ± 1.21	61.23 ± 1.27
Morphologically Normal Sperms (%)	76.26 ± 0.48	71.06 ± 0.87	80.6 ± 0.9	82.04 ± 0.72	81.11 ± 0.61

Values indicate : Mean ± S. E. M.

ingredients but not tobacco for 7 months to 5 years & seven months (means 2.7 years) and 126 were non consumers of any of these items. The last group saved as controls (Table I. Smokers smoked 3 to 22 bidies cigarettes (mean 6.1) only.

As shown in this Table, all males were around 26 yrs. of mean age and the mean period of infertility ranged from 3.6 yrs. to 4.2 yrs. Besides, the selection criteria were equally applied to all.

When matched with proper controls. it was found that none of the semen parameters were affected in any of the 5 groups.

A difference of nearly 6 million/ml. in sperm count amongst paan masala consumers and non consumers though looked large, when evaluated statistically, the difference of about 8% in sperm motility between smokers and nonconsumers did not stand the scrutiny of statistical evaluation and was thus found insignificant.

Also, when the normally accepted parameters of 2.5 ml semen volume, 20 million/ml sperm count with atleast 20% motility and about 80% morphologically normal sperms are applied to these matched controls, it was found that the aforesaid habits on their own, per se failed to alter the quality of semen to the extent of rendering it abnormal.

#### DISCUSSION

Effect of different agent on spermatogenesis is investigated on quite a few occasions. Whenever a detrimental effect was

suggested for tobacco or allied agents, it was found that this effect is most likely on an already impaired spermatogenesis rather than on healthy individuals (Shaarawy and Mahmoud - 1982 and Vogt H. Z. 1985). In this study we have taken males who did not otherwise had reasons for an impaired spermatogenesis. In a study carried out at our institution the effect of smoking on spermatogenesis was demonstrated in heavy smokers. However that study had a much smaller subjects (n=14) and cases were not matched with controls. Also, in that study in light smokers (n=18) no significant effect was noticed on spermatogenesis. Results emerging from this study gives us some strength to conclude that tobacco consumption does not significantly affect the seminal quality as only and individual acting factors. The same also holds true for paan masala and betel leaf chewing.

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