

Subjective effects of MDMA ('Ecstasy') on human sexual function

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Summary – Sexual function following 3,4-Methylenedioxymethamphetamine (MDMA, or 'Ecstasy') consumption was subjectively evaluated in 35 healthy recreational users (20 men and 15 women, aged 21–48 years) with regard to four major domains of sexual activity: desire, erection (lubrication in women), orgasm and satisfaction. Desire and satisfaction were moderately to profoundly increased by MDMA in more than 90% of subjects. Orgasm was delayed but perceived as more intense. Erection was impaired in 40% of the men. It seems that MDMA impairs sexual performance, in spite of enhancement of sexual desire and the perception of greater satisfaction. © 2001 Éditions scientifiques et médicales Elsevier SAS

dopamine / ecstasy / MDMA / serotonin / sexual dysfunction

INTRODUCTION

The recreational use of 3,4-methylenedioxy-methamphetamine (MDMA or 'Ecstasy') has gained increased popularity during the last decade despite legislative actions to limit its distribution. An estimated half-million people in England have taken MDMA [10]. There have been reports of MDMA use in three types of settings: in psychotherapeutic sessions to facilitate interpersonal communication; in small social gatherings where its most common reported effect was a heightened sense of closeness with other people; and in the more recent setting of large, organised all-night dance parties known as 'raves' [15]. The short-term psychological and physical (mainly sympathomimetic) effects of MDMA last for 3–6 hours [5, 15]. Although many users describe sexual arousal by what is commonly believed to be a 'love drug' [4, 5], the effects of MDMA in a sexual setting have not been systematically examined.

MDMA is structurally related to the stimulant amphetamine and the hallucinogen mescaline. Its acute effects, at least in animal models, appear to be mediated by the release and reuptake inhibition of brain monoamines, particularly serotonin and dopamine [7, 14, 15]. These biogenic amines have been implicated as facilitatory (dopamine) and inhibitory (serotonin) mediators of sexual desire, arousal and orgasm [6, 12]. Therefore, MDMA-related changes in sexual function may provide some insight into the role of serotonin and dopamine in human sexuality. The aim of this study was to determine the effects of MDMA on the different stages of the sexual activity cycle in healthy recreational users.

SUBJECTS AND METHODS

Twenty males and 15 females who had occasionally used MDMA before engaging in a sexual encounter consented to undergo a structured interview in order to evaluate their sexual function while under the influence

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of MDMA (up to 6 hours after drug consumption). We included only physically healthy subjects who did not have a major psychiatric disorder or history of sexual disorders, did not abuse alcohol or opiates, and were medication-free. Most of them (94%) had achieved a high school or academic education level. Six subjects were full-time university students and the rest were steadily employed in professional occupations. All subjects had prior recreational experience with MDMA. Nine subjects (25%) were interviewed by telephone; however, the same exclusion criteria were addressed.

Four major domains of sexual activity were evaluated in the structured interview: desire, erection (lubrication in women), orgasm and satisfaction [16]. Orgasm was further assessed for intensity and ease of achievement (premature, reserved or delayed). Each item was rated in comparison to the baseline function of the subject on a scale of -3 to +3 [0 = unchanged, -1, +1 = mild, -2, +2 = moderate, -3, +3 = profound; decrease (-) or increase (+), respectively]. The ratings represent the individual's retrospective, self-perceived experience with MDMA in a sexual setting.

RESULTS

The obtained detailed data is presented in *table I*. All subjects reported an increased sexual desire after MDMA use. In 19 out of the 20 male subjects (95%) and in all the female subjects, the increase was moderate to profound. The sexual experience was described by most subjects as more sensual than usual. Similarly, 90% of the males and 93% of the females reported a moderate to profound increase in satisfaction.

Equivocal responses were obtained with regard to erection: 40% of the males reported a negative effect and 40% a positive effect. In women, 80% reported that lubrication was enhanced.

Delay in achieving orgasm while under the influence of MDMA was reported by 16 males (80%) and six females (40%). One male and two females had not been able to achieve orgasm at all on MDMA. Although the orgasm was delayed in many users, it was perceived to be more intense in 85% of the men and 53% of the women.

Ten males (50%) and ten females (67%) reported an occasional concomitant use of marijuana. These subjects noted that the main effect of marijuana adjunction was enhancement of sexual desire. Ratings for this study, however, were restricted to the use of MDMA

alone. There were no differences in any of the sexual parameters between concomitant marijuana users and nonusers.

DISCUSSION

The results of the present study suggest that MDMA has an enhancing effect on sexual desire, satisfaction, female arousal, and orgasmic intensity, but an inhibitory effect on orgasm latency (delay). The effects on male erection were inconsistent, although 40% experienced a decrease in erectile ability. These findings are in line with the only existing survey we are aware of that specifically addressed the influence of MDMA on sexual function [3]. In that study, which used self-rating questionnaires distributed in the San Francisco area, subjects reported that MDMA enhanced sensuality, made orgasm more difficult to achieve, and decreased erectile ability in 46% of the males.

The neurobiological substrate of human sexuality is still poorly understood. Current hypotheses suggest that central dopaminergic activity is associated with sexual desire and erectile response [1, 6, 9] while central serotonergic activity is inhibitory to erectile and orgasmic function [1, 12, 13]. The reported effects of MDMA on sexual activity may support these hypotheses. The activation of the dopaminergic system by MDMA may account for the increase in desire and satisfaction. This assumption may be supported by the high proportion of subjects (57%) who used marijuana, a cannabinoid with some dopamine-releasing activity [2], as an adjunct to MDMA for further facilitation of desire. The inhibitory effect on orgasm is similar to that induced by the widely prescribed antidepressants, including the selective serotonin reuptake inhibitors [11, 13, 16], and may be related to stimulation of the serotonergic system. The inhibitory activity of serotonin on erection [1] may play a role in the emergence of erectile dysfunction reported by some (40%) of the MDMA users. The peripheral sympathomimetic effects of MDMA may contribute to the reported erectile dysfunction [1, 4, 12]. The possibility that some of the self-reported changes in sexual functioning might be due to expected effects of the substance ('placebo effect') should not be disregarded. It has been shown, for example, that alcohol consumption in women led to self-perceived increased sexual arousal and increased sexual activity when it actually induced decreased reactivity and less sexual activity [8, 17].

Table 1. Demographic data and sexual function following MDMA in 35 subjects.

No.	Age (years)	Education (years)	Desire	Erection/ lubrication	Orgasm intensity	Orgasm delayed	Satisfaction
<i>Males</i>							
1	22	12	+3	-1	+2	+2	+3
2	23	13	+3	+2	+3	+3	+3
3	24	13	+3	+1	+3	0	+3
4	24	13	+2	0	+3	+3	+3
5	24	15	+2	0	+3	+2	+3
6	25	12	+3	+1	+3	+3	+3
7	25	13	+1	0	0	0	0
8	25	14	+3	+2	+3	+3	+3
9	25	13	+2	-1	+3	+2	+2
10	26	12	+3	+2	+2	+2	+3
11	28	15	+3	-2	+3	+1	+3
12	32	12	+2	+3	+3	+3	+3
13	34	10	+3	+3	+3	+3	+3
14	35	15	+3	-1	+3	+2	+3
15	36	19	+3	-3	-3	A	+3
16	39	12	+2	-1	+2	+2	+3
17	40	19	+2	0	+3	0	+3
18	44	17	+2	+1	0	+1	0
19	45	15	+2	-2	+2	+3	+3
20	46	19	+3	-3	+1	+1	+3
<i>Females</i>							
1	21	12	+3	+2	+3	+1	+3
2	22	12	+3	-3	+3	+3	+3
3	26	12	+2	0	0	0	0
4	26	15	+2	+1	0	0	+2
5	27	15	+2	+1	0	0	+2
6	28	12	+3	+3	+3	+2	+3
7	28	19	+3	+3	-3	A	+3
8	30	12	+3	+3	-2	+2	+3
9	31	11	+2	+2	+2	0	+3
10	32	19	+3	+3	+3	+3	+2
11	33	12	+2	+2	0	+1	+3
12	34	19	+3	+3	+3	0	+3
13	44	17	+3	+2	+3	0	+3
14	45	15	+3	+1	+2	0	+3
15	48	15	+3	-1	-3	A	+3

Numbers represent ratings as compared to regular sexual function (without MDMA): 0 = no change; 1 = mildly changed; 2 = moderately changed; 3 = markedly changed; (+) = increase, (-) = decrease. A = anorgasmia.

There are several methodologic limitations associated with studies of this type. The sample was not randomly selected and included only subjects who were willing to describe their experience with an illegal substance. The reports were retrospective and prone to inaccurate subjective recollections, and the dose and purity of MDMA in the pills could not be determined [18]. Finally, the associate use of marijuana in about half of the subjects

may be a serious confounding factor. Despite these difficulties, the present study indicates that when MDMA is used in a sexual setting, its main effect is enhancement of sexual desire and subjective satisfaction. The increased desire, however, is associated in most subjects with orgasmic or erectile dysfunction. Thus, it seems that MDMA impairs sexual performance in spite of the perception of greater satisfaction.

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