Toxic Effects of Injection of Morning Glory-Seed Extract in Pregnant Rabbits

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Illicit uses of hallucinatory substances, such as LSD, mescaline, and morning-glory seeds have caused serious consequences. Because of LSD's ability to change chromosomes (Ayd, 1967) and its similarity to alkaloids in morning-glory seeds (Rice and Genest, 1965), a study of the effects of morning-glory-seed extract on rabbits was undertaken.

The purpose of this study was to present information that may help evaluate the teratologic potential of morning-glory seed and to compile useful data regarding the resultant genetic effects in rabbits. In the general field of hallucinatory drugs and their prolonged ill effects, this study projects the possibility of tragedy following the use of such drugs.

One account reported birth defects in a baby born to a woman who had taken LSD during pregnancy. The deformed right leg of the baby was abnormally short and dislocated at the hip (Zellweger, 1967).

There are several reports of ingestion of morning-glory seeds being followed by LSD-like symptoms. One student committed suicide and others developed catatonic reactions and were hospitalized. The illicit use

of the seeds is expanding. In one raid (Hoffer, 1965), federal agents seized 100 lb. of morning-glory seeds.

Two alkaloids present in morning-glory seeds are lysergic acid amide and isolysergic acid amine. These are similar to lysergic acid diethylamide (LSD) (Rice and Genest, 1965).

MATERIALS AND METHODS

Preparation of morning-glory seed extract—One hundred seeds of the Heavenly Blue variety were crushed with mortar and pestle. The broken seeds were boiled in distilled water for 1 hr, resulting in 50 ml of brown, oily fluid. After being filtered through gauze, the liquid was placed in rubber-stoppered vials and sterilized.

Experimental Animals—Two does and three bucks, each with previous history of being parents of normal litters, were used. Doe I, a 16-month-old Black and White Checkered Giant, had mothered three litters totaling 23 normal offspring. Doe II, an 8-month-old California Snip Nose, was the mother of a litter of 10 normal offspring. Buck A, a 15-month-old Gray and White Checkered Giant, had sired several normal litters as had Buck B (age 14 months) and Buck C (age 24 months), both New Zealand White.

Experimentation (Table I)—On the eighth day of gestation, injections of morning-glory-seed extract, increasing from 0.25 to 1.5 ml (a total of 9 ml, equivalent to 18 seeds), were administered daily for 10 days to Doe I. After the second and third breedings, no additional injections were made.

Doe II was given only one injection of 1 ml of extract on the eighth day of gestation after the first breeding. The doe was bred a second time, but was not given another injection.

RESULTS

After injections of morning-glory-seed extract, Doe I exhibited hyperactivity and some lack of motor coordination within 5 min and continued these manifestations for 1 hr. Four months later, unusual behavior was still evident. The breeder informed me that there were evidences of pregnancy, but no litter was produced. It is assumed that the embryos were resorbed.

Doe I was bred two more times but produced no litters.

Doe II, given only one injection of 1 ml of extract after eight days

TABLE I. EXPERIMENTAL BREEDING

Parents	Breeding date	Morning-glory injections	Delivery	Litter size
Doe I × Buck A	16 Nov. 1967	10 (0.25 to 1.5 ml) 24 Nov. to 3 Dec.	——	none
Doe I × Buck C	5 Jan. 1968 & 9 Jan. 1968	none	——	none
Doe I × Buck A	17 Feb. 1968	none	——	none
Doe II × Buck B	28 Dec. 1967	1 ml 5 Jan. 1968	28 Jan. 68	7 abnormal
Doe II × Buck C	3 Feb. 1968	none	6 Mar. 68	2 normal

of gestation, gave birth to seven abnormal offspring. Two embryos, confirmed as such by a pathologist, were about 2 cm in diameter. Of three stunted and undersized offspring, one was born dead, one lived 3 hr and one 5 hr. Another offspring appeared normal, but lived only 5 days. Autopsy revealed urinary bladder obstruction. The seventh offspring was born without a head and no skin or sternum in the thoracic region.

CONCLUSIONS

Since Doe I had previously produced normal litters, it may be assumed that under normal conditions she should have been capable of conception, normal-term pregnancy and parturition. In three matings, involving two bucks, no progeny were produced. Possibly the dosage of morning-glory-seed extract was massive enough to cause sterility or resorption of the embryos after conception.

The much smaller doses administered to Doe II did not prevent pregnancy, but apparently did interfere with normal embryonic development. Although it is not safe to conclude that the bizarre, teratologic progeny of Doe II resulted from the 1 ml dose of morning-glory-seed extract, this is indicated because no other known variable was involved in the treatment of the experimental animals.

Since morning-glory-seed alkaloids and LSD are similar, the results of the present experiments indicate a need for public recognition of the potential dangers of personal experimentation with hallucinatory drugs. The statement of Hoffer (1965) should be heeded. He wrote, "The ingestion of large numbers of morning-glory-seeds by the adventurous is not recommended—The price of morning-glory could be too high."

LITERATURE CITED

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