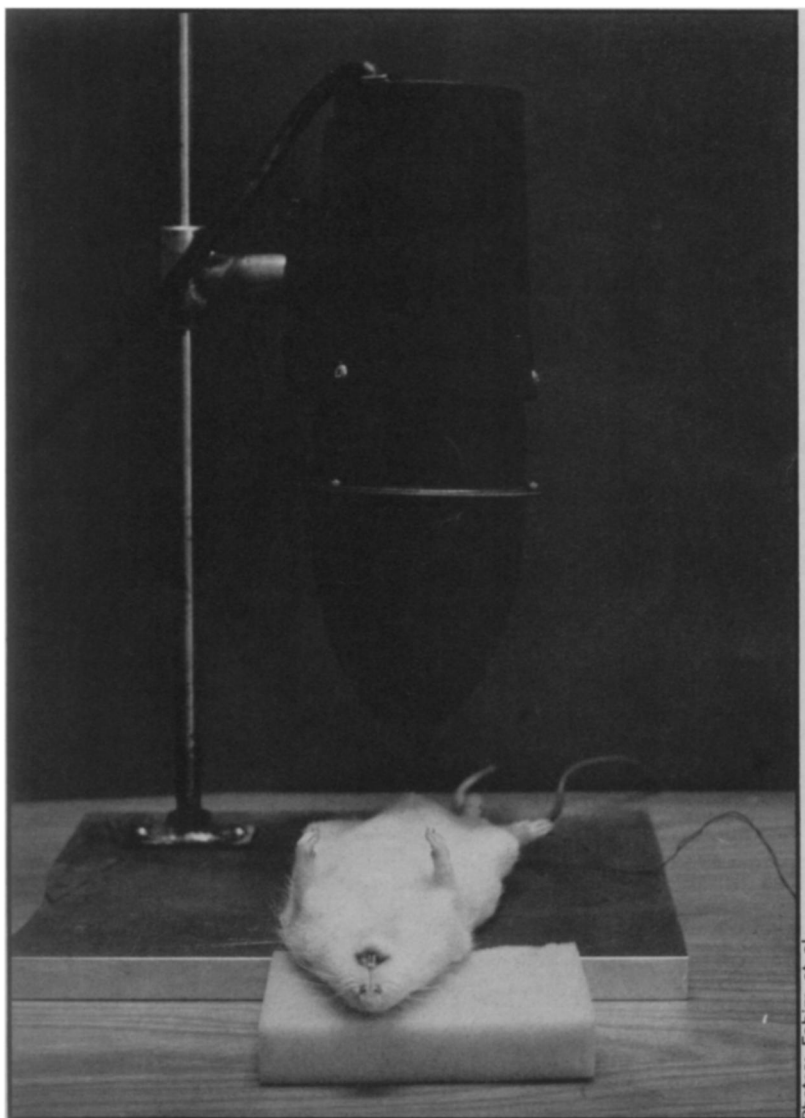


Sperm Don't Like It Hot



Sterilization is bliss under an infrared spot heater.

Electronic devices show promise as effective, safe and reversible male contraceptives

by Joan Arehart-Treichel

A vasectomy consists of cutting the tube (vas deferens) that allows sperm to pass from the testes into the penis. Some two-and-a-half million American men have had vasectomies. Vasectomy is becoming as American as mother and apple pie.

Scientists at the University of Missouri School of Medicine, headed by reproductive pharmacologist Mostafa S. Fahim, found that vasectomies can

produce ample adverse effects in male rats—reduction in testis weight, a lowering of the male hormone testosterone in the blood, body weight gain, fat deposits in the liver and partial impairment of drug-metabolizing enzymes in the liver. These adverse effects became apparent only six months to a year after vasectomy. Since there have not yet been any studies on the long-term effects of vasectomies on men, Fahim and his colleagues worry that men undergoing the procedure might experi-

ence the same adverse effects that their rats did.

This worry, accompanied by the poor chance of reversing vasectomy (around 30 percent), prompted Fahim and his team to look for a male contraceptive that is as effective as vasectomy but that is safer and reversible. They believe they've found it: heat. "Heat is fun, too [sexually arousing]," Fahim reports on the basis of his laboratory observations.

There is evidence that cold can en-

May 11, 1974

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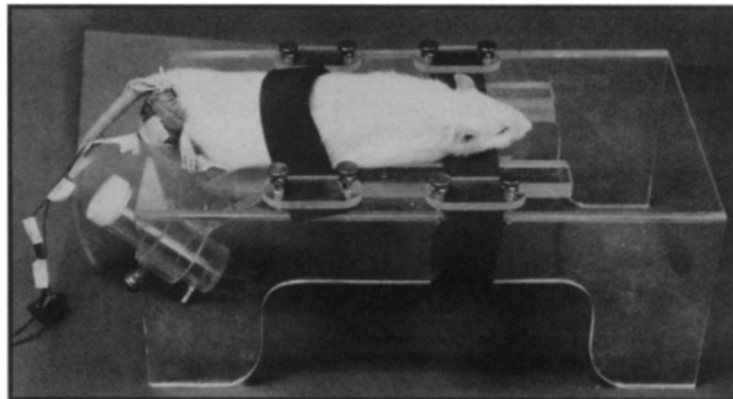
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Testes hot bath sterilizes mouse from 30 to 53 days.

hance sperm production. The March 4 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION reported that a two-week regimen of 30-minute cold baths caused a rise in sperm count and motion in three infertile men. After the baths, one of the men was able to make his wife pregnant. Similarly there is evidence that hot baths, steam, fever, tight-fitting pants and other forms of heat can turn off sperm production in men. But no one, apparently, had bothered to check out the potential of heat as a means of male contraception. So Fahim and his team decided to do so.

They divided male mice into five groups of 50 animals each. One group served as a control. The testes of the males in a second group were placed in tiny cups of 60 degree C. water for 15 minutes. (This is the temperature of sauna baths. Bath water that people use is usually around 40 to 45 degrees C.) The males were then mated with females 24 hours after treatment, then each five days afterward with another batch of females until they were finally able to sire offspring. It took them 30 to 35 days to do so. The male rats were given another testes hot bath. This time they remained infertile for 48 to 50 days.

A third group of rats had their testes exposed to 60 degree C. heat for 15 minutes by an infrared spot heater. Their fertility was impaired for 60 to 75 days, double the period of the water-treated group. A fourth group of rats had their testes exposed to microwaves emitted by a machine that is used in medical therapy. All the animals' testes were raised from the normal temperature of 34 degrees C. to 39 degrees. But the percentage of power used and the duration of exposure varied.

One subgroup was exposed to 100 percent power for five minutes, a second subgroup to 20 percent power for one minute, a third subgroup to 20 percent power for five minutes and a fourth subgroup to 20 percent power for 15 minutes. The second subgroup impregnated females 21 days after treatment. But the other subgroups have not regained their fertility since the study was conducted eight months ago.

In terms of human life span, this means that their fertility has been impaired from five to seven years.

A last group of rats had their testes exposed to one or two doses of ultrasound for five minutes. (Ultrasound vibrations generate heat.) The temperature of the rats' testes was raised to 38 degrees C. None of them have made females pregnant since the study was conducted eight months ago. No side effects have been noticed. Studies of the males' testes show no sperm production is taking place. No hormonal imbalance or change in male behavior or libido has been noted.

Once sperm production returned to the rats exposed to heat treatments, they sired normal-looking offspring. Fahim and his team examined the sperm ejaculated by the recovered animals and did not find any signs of genetic mutations. However they are looking into the long-term side effects of the various treatments to make sure that the treatments are not harmful to either males or their progeny. If the treatments turn out to be safe, they then hope to try them on human volunteers.

Ultrasound offers the greatest promise as a contraceptive for men, Fahim believes, because it would be more practical, efficient and pleasant than the other methods. "Five minutes' exposure to ultrasound," Fahim prophesies, "would be like taking hot baths continuously for three or four months. It would be like a massage around the testes." He is trying to interest electronic companies into making an ultrasonic device that men might buy and use at home.

He also sees ultrasound offering a new dimension in the population control of dogs and cats. At its recent annual meeting, the National League of Cities adopted a new policy on pet control: "Dog and cat overpopulation in urban areas is now recognized as a threat to health as well as an assault on urban aesthetics, a pollutant and a safety hazard. It also represents a major city expenditure."

"Electronic contraception is the thing," Fahim avows. □