

Hormonal birth control alters scent communication in primates

27 July 2010

Hormonal contraceptives change the ways captive ring-tailed lemurs relate to one another both socially and sexually, according to a Duke University study that combined analyses of hormones, genes, scent chemicals and behavior.

Contraception alters the chemical cues these scent-reliant animals use to determine genetic fitness, relatedness and individuality. And, as a sort of double whammy to birth-control efforts, male [lemurs](#) were shown to be less interested in females that were treated with contraceptives.

"Hormonal contraception is known to alter the attractiveness of [scent](#) cues in humans and the presence of fertility cues in other primates," said Christine Drea, an associate professor of [evolutionary anthropology](#) at Duke. "We wanted to understand all the ways in which contraception changes scent cues and the subsequent way these animals might interact with each other."

A dozen female lemurs at the Duke Lemur Center were given monthly injections of the contraceptive [Medroxyprogesterone acetate](#), or MPA, (marketed as Depo-Provera by Pfizer). Drea's chemical analysis found that they expressed different scent molecules than "intact" females, significantly altering the signals females send about themselves to social contacts and prospective partners. In other words, they smell funny.

The findings are part of a series of studies that Drea's group has done using chromatography to tease apart the chemical components of the rich stew of scents produced by lemurs. A female lemur's scent normally conveys not only her fertility status, but also information about identity, her relatedness to others and her genetic homozygosity, an indicator of in-breeding.

If all of that information is scrambled by hormonal contraception, it may in part explain changed patterns of aggression that other studies have

noted when captive primates are treated with contraceptives, Drea said.

In this study, the 12 females served as both intact and contracepted females by being sampled in each condition. Under contraception, the females were found to express some scents that intact females do not, and to express scents in different proportions. The contracepted females also tended to lose their scent individuality.

"There's something very different about these gals," Drea said. "If animals are figuring out who their kin are by scent, she no longer smells like her brother."

In behavioral tests, the 13 males in the study showed clear preferences for the scents of intact females, spending less time investigating odor samples from contracepted [females](#).

The bigger question is whether these findings are relevant for our own species, Drea said. Humans are known to send and receive olfactory cues about hormonal status and possible compatibility. "One has to wonder if human mate choice might be affected in some of the same ways it has been in these primates," Drea said.

More information: The research appears online in *Proceedings of the Royal Society B*.

Provided by Duke University

APA citation: Hormonal birth control alters scent communication in primates (2010, July 27) retrieved 11 April 2021 from <https://phys.org/news/2010-07-hormonal-birth-scent-primates.html>

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