

Pheromones: Does humans emit sex scent signals

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Abstract

The invisible, colourless chemical scent emitted by human beings is known as Pheromones, these chemical signalling molecules are volatile, odorous substances, triggering some sort of physiological reaction. The physiological reactions can manifest themselves in a variety of different ways: some pheromones affect aggression, some modulate sexual activity and other pheromones have similarly diverse effects on the target animal. Pheromones have been known to perform main role in number of organisms ranging from amoebas to fish to mammals, including primates. However, the question of whether does humans emit sex scents signals? Do human olfactory signals for pheromones exist? Has been a question of much debate with few definite conclusions. In this paper I will look at some possible examples of odour signalling in humans.

Key Words: Pheromones, vomeronasal organ, sex, odour, behaviour.

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INTRODUCTION

Pheromones are chemicals secreted by a particular animal which can alter/change the behaviour of another animal belongs to the same species. Many scientists have described pheromones are one of those behaviour-altering agents, which can trigger different behavioural changes apart from the sexual behaviour in the animal belongs to the same species. Pheromones are known as ectohormones – i.e. they act outside of the individual's body who secretes them – they alter the behaviour of another individual. In case of hormones which only can affect the individual's body functions that secretes them¹⁻³. It is well documented that males and females of many species can emit or can communicate through chemical signals (chemotaxis) known as pheromones, but there

remains the same question as to whether humans can also secrete these chemical signalling molecules called as pheromones⁴⁻⁶. Researchers from Sweden used brain imaging procedures which have found the evidence that men and women can in fact release and receive the subconscious odour signals, both of them, respond to these odour signals differently⁷⁻¹⁰. The airborne chemical messengers released from the human body (i.e. urine and sweat) are known as human pheromones which have a direct impact on physical and emotional changes on another fellow human. Most of the animals including humans can detect, smell these pheromones with the help of half-moon shaped specialized structure located inside the nose called the vomeronasal organ (VMO). On the other hand, non-pheromone scents such as the smell of food or flowers are sensed by another part of the nose called as olfactory epithelium. Pheromonal signals sensed by VMO then relayed through olfactory nerves to the olfactory cortex, then some part of the information is sent to an area of the brain called the hypothalamus, which is known for its activity to alter the hormonal changes, emotion, sexual and reproduction behaviour^{11,12}. A Signature Scent: As the search for human pheromones continues, scientists have also investigated other potential explanations for the subtle effects of smells. Consider, for example, the finding that human infants will crawl toward the odour of their mother's breast. Baby rabbits are known to begin

nursing when exposed to a specific pheromone from a lactating mother rabbit. Yet the human infants might simply be attracted to a mother's so-called odour print, or unique personal scent. Odour prints are influenced by diet, environment, health and genetics. They consist of far too many compounds to be described as pheromones themselves^{4,5,11}.

PROOF ABOUT HUMAN PHEROMONES

Gustav Jäger a German doctor and hygienist is thought to be the first scientist to put forward the idea of human pheromones. He called them **anthropines** and said that they were lipophilic compounds associated with skin and follicles that mark the individual signature of human odours. Lipophilic compounds are those that tend to combine with, or are capable of dissolving in lipids¹³⁻¹⁵. In 1998, the path-breaking discovery carried out by Dr. Martha McLkintock in human pheromones field described that those women stay in hostel together, stay in a group in home like accommodation their physiology shows that there is synchronization of menstrual cycle; it is probably because of the chemical scents released through sweat from those menstruating women body^{16-20,25}. In recent advances in the field of human pheromones, scientists used scanning technique such as PET (Positron Emission Tomography) scan to study the brain functions of selected 24 men and women while they are exposed the odour emanating chemicals which are almost identical to the human sex hormones such as testosterone and oestrogen. The expert scientist from the field of chemical signalling Dr. David Berliner analysed these PET scan findings and concluded that women has a ability to communicate with men and vice versa, these findings also support that the human pheromones do exist. This opinion is based on the important observation that the human sex hormones like chemicals activate specific areas of the brain which controls human behaviour^{11,12,14}. Another scientist group from Karolinska Institute under the leadership of Dr. Ivanka Savic, found out that the hormone-like scents activates and turn on the human brain's specific area called as "hypothalamus", which regular odours are not able to activates. They also observed that the brains of women and men respond very differently to the different sex hormones²⁷⁻²⁹. When men are allowed to smell the chemical similar to estrogen, their brain's hypothalamus became "turn on" but not during smelling of testosterone-like chemicals, whereas women's hypothalamus has the exactly opposite response: their hypothalamus was turned on only by the testosterone-like chemicals and not the estrogen-like one. They have also observed the sexual disparity among the specific sub-regions of the hypothalamus after the activation to specific smell stimuli^{23,24,26}. Scientists

believe that human behaviours are gender-specific, this may be because of the way we chemically perceive the opposite sex is very different than the way we perceive members of the same sex^{11,12}. A Swedish study found that lesbians react differently to AND (progesterone derivative 4,16-androstadien-3-one) compared with heterosexual women. AND is ten times more abundant in human male sweat than female sweat⁸. A study, published in *Respirology* in January 2016, showed that AND caused swelling in the erectile tissue of female noses. This was taken as evidence that AND might be a functioning pheromone¹. Another contender for the role of human pheromone is androstadienone. There is some evidence that androstadienone, a component of male sweat, increases attraction, affects mood and cortisol levels and activates brain areas linked to social cognition. One study found that androstadienone increased cooperative behavior in males³¹. Androstenone, secreted only by males, has also been tested for its potential role as a pheromone. According to some studies, androstenone increases a woman's mood, especially if she is presented with it close to the time of ovulation. Overall, evidence for the existence of pheromones in humans is weak but it cannot be ruled out entirely. If human pheromones are ever found, the likelihood is that their effects are incredibly subtle^{30,32,33}.

Types of Pheromone: There are four principal kinds of pheromones^{33,34}:

1. **Releaser pheromones** - They elicit an immediate response, the response is rapid and reliable. They are usually linked to sexual attraction.
2. **Primer Pheromones** - These take longer to get a response. They can, for example, influence the development or reproduction physiology, including menstrual cycles in females, puberty, and the success or failure of pregnancy. They can alter hormone levels. In some mammals, scientists found that females who had become pregnant and were exposed to primer pheromones from another male, could spontaneously abort the fetus.
3. **Signaler Pheromones** - These provide information. They may help the mother to recognize her newborn by scent (fathers cannot usually do this). Signaler pheromones give out our genetic odor print.
4. **Modulator Pheromones** - They can either alter or synchronize bodily functions. Usually found in sweat. In animal experiments, scientists found that when placed on the upper lip of females, they became less tense and more relaxed. Modulator hormones may also affect a female's monthly cycle.

Can Pheromones Make Us More Sexually Attractive? - If these pheromones turn on areas of the brain that control mood, hormones and sexual behavior, one might then ask: "Can these chemicals make us more attractive?" The answer is: Maybe. Researchers at the University of Chicago and University of Utah have found that the same sex hormone-like chemicals used in the Swedish study can in fact have a pheromone effect by producing changes in mood, heart rate, breathing, and body temperature. However, there is currently no indication these chemicals can actually increase sexual arousal or attraction^{35,36}. Many perfume companies have tried to capitalize on the potential sex-specific effects of these chemicals by adding them to their fragrances. But most of these companies add hormones from animals such as pigs and deer, so they probably don't work. Pheromones are generally species-specific, so a perfume enhanced with pig pheromones is really only useful for other pigs³⁵⁻³⁷. The promotions of one company that adds human hormones to its fragrances claim the additives will "put you and your partner at ease, boost your confidence, and contribute to a feeling of well being." The general idea is that pheromone perfume can replace our naturally produced pheromones that have been washed off through bathing and hidden by layers of clothing. If these claims are true, pheromones may make us more attractive to potential mates by bringing out our best qualities and allowing us to appear more self-assured and relaxed. That "feeling of well being" may also make us a lot more pleasant to be around³⁷⁻³⁹. Pheromones as Therapeutics: The ability of these sex hormone-like chemicals to activate areas of the brain that control hormones indicates they may have more broad-ranging therapeutic value as well. For example, Pherin Pharmaceuticals is currently developing numerous synthetic pheromones that it hopes will be effective in decreasing symptoms of anxiety disorders, premenstrual syndrome in women, and prostate enlargement in men.

CONCLUSION

The previously discussed studies have suggested that pheromones can communicate information about genetic compatibility, sexual orientation and gender by affecting humans unconsciously and physically. Reproduction is the most important aspect when it comes to being a successful species, comparable only, perhaps, to survival. Of course it makes sense, then, that there are mechanisms beyond our control that urge us not only to procreate, but with mates that will result in the most successful

offspring. I urge those of you who are not yet die-hard determinists not to view the effect of pheromones on mate choice as a loss of agency, but as a gain of sensory ability, enabling us to make a more informed decision. Pheromones are just another way we can communicate.

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