Special Article

The Incredible Sense of Smell

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From the time we get up in the morning to the time we go to sleep our sensory functions con stantly registers in our brain. However, due to our pre-occupation in our routine we disregard to respect them. It is only when we lose the function we do realise its importance. Presiding over the ear, the eye, the touch, the taste and the smell, as also the mind, he experiences objects said, Lord Sri Krishna in the 'Bhagavat Gita'. *(Chapter 15, Verse 9).* As ordained we have five sensory perceptions namely vision, sound, touch, taste and smell, using which we enjoy life on earth.We normally believe that the sense of vision is most important and valuable. Ears come next. It is easy to imagine the loss of eyes and ears. Blindness leads to loss of vision, complete blackness, no more faces of people you love or hate, no natural scenery and blue skies, no television or cinema and no more enjoying the cover drive of Sachin Tendulkar. Deafness means unable to hear people, no sweet voice of Lata Mangeshkar, or any music; in short total silence. A person devoid of the sense of touch is good as dead.

One can still survive and live without the above two senses, but just imagine the loss of smell and taste. A person suffering from this affliction will barely understand what is happening around him. One can see, hear, but still be all alone. One cannot smell the sweat in a crowded Virar local, nor the beauty of flowers and the tasty bite mother has made. In short, a very frightening and depressing experience. Losing the sense of smell means losing an alarm function that God has endowed. Just imagine a gas leak, the beginning of a major fire and you have no idea about it, whatsoever. Losing the sense of smell also means the loss of taste. Our tongue normally functions in conjunction with our nose, to give us our complete experience. Without smell, food will no doubt taste sweet, sour, salty or bitter, but the pleasure of having it is lost.

Human nose is photogenetically very old, functioning at a subconscious level as a chemical tool. We know that in case of our eyes, ears and touch, the message to the brain is passed through the lengthy and complex nervous system. However, in case of the nose, the passage is through the limbic system or the rhinencephalon, also called the olfactory brain. The limbic system is associated to the hypothalamus and the brain stem. This is present in all living animals and is responsible for basic instincts like eating, drinking, breathing and sex. However, in case of humans, the neocortex or the thinking layer, is evolved and gives instructions to impulses like hunger, thirst, arousal and other emotions generated by the limbic system. The aroma that arrives at the receptive region of the limbic system is directed to the neocortex-thinking portion to be understood and assessed.

The aroma molecules given off by our food pass through our nasal route and from the back of the throat past the areas of yellow brownish mucus membrane or nasal epithelium located high up in our nasal cavity. The nasal epithelium is made up of receptor cells passing on the taste and smell to the olfactory bulb of the brain. When the air passages are blocked, smells have a difficulty in reaching the sensory cells of the brain and the food loses its taste.The human nose made is more accurate than any machine designed by humans. The nose can detect the smell of mercaptans even at levels of one part per four hundred and sixty bn parts in air. Incredible isn't it? It is believed that more deeply coloured the olfactory membrane, the more sensitive they are to difference in odour intensity and preferences. Persons with darker skins have better sense of smell. Orientals appreciate spicy and heavy perfumes, Phoenicians like pepper and Japanese like camphor.

Disease, pregnancy, smoking, and chemicals all affect the smelling performance of individuals. Temporary loss of smell is observed during cold, flu, sinus infection and allergies. Exposure to chemicals resulting from the inhalation of vapours of solvents, cleaning fluids, pesticides and herbicides, also leads to a temporary loss of smelling ability. Smokers have a blunted response to odour quality. In general, it is observed that smokers find unpleasant smells less un-

pleasant and pleasant smells less pleasant when compared with a non-smoker. The explanation probably lies in the relationship between nerve cells in the nose and the information reaching the brain due to the reduced levels of nasal irritability in smokers. Regardless, smoking has an impact on the sense of smell and thus potentially on the smokers quality of life. During pregnancy sensitivity to odour increases. This is more in case of unpleasant types of odour.

Man smells his fellow humans and distinguishes between them by odour, reacting to their impressions at an emotional level. The sense of smell is the only one that is fully mature at birth. New-born babies have a nose for their natural mothers. For example, infants calm down perceptibly when wrapped in a cloth worn by their mother. They however show mounting unrest if the cloth is freshly laundered or belongs to someone else. Smell plays a major part in fostering human relations to the extent one can recognise and judge another by their personal odour signature. Of all sensory perceptions, fragrance communication is the most complicated one with a very high degree of subjectivity. Inspite of high subjectivity, an average healthy nose can detect about 4000 different odours, while sensitive and trained noses can smell more than 10,000 odours in a lifetime, thanks to the 6-10 million receptor cells present in the olfactory membrane of the human nose, directly linked to the brain.

Fragrance odour is normally overlooked in our daily routine because it is a background stimulus and not usually the focus of attention. Our emotions and behaviour are influenced by fragrances. A smell, that we are very much accustomed to, is not noticeable, but to others, it represents a very distinctive odour. A public toilet or a butcher shop or cigarette smoke can make us restless without us specifically noticing the smell. An odour penetrates an individual's memory and subconscious mind, stirring deep feelings, and emotions. Tests have shown that spiced apple and some floral smells lower blood pressure and heart rate. Smell of strawberry in surgical masks help reduce fear and anxiety. A scent of pine helps one relax and a hint of lime and fresh floral helps sharpen concentration. We are exposed daily to a succession of fragrance odours that are usually registered in our subconscious mind and affect the emotional state of our mind. This is very different to our other senses that are registered in our conscious mind. A particular odour can trigger the memory in its own unique and powerful manner. An old perfume advertisement put this very aptly. It says, "Nothing triggers memory as strongly as a scent. Just a hint of a particular fragrance brings back that time, that person. Names are forgettable. Even photos fade, but perfume lingers." The ability of a fragrance to evoke memories is great. Even after many years, a particular fragrance smelled just once has a power to recall feelings, events images and experience. Writer Rudyard Kipling remarks, "Scents are surer than sounds or sights to make your heart strings crack"

Every person possesses a distinct body odour, more accurate than a finger print. Identical twins do not smell the same. The hairy areas of our body, that are developed fully during puberty, retain the exuded body odour. Sometimes, this odour is attractive to one partner and sometimes causes resentment. Body odour depends on the individual's race, diet, hygiene and habitat. The food consumed by an individual manifests itself by the unique body odour types of different races. Americans smell of butter, Europeans smell of meat, Hindus smell ethereal, people in the Mediterranean smell of garlic and onions. Apocrine glands, which produce body odour, are denser in Europeans in comparison with the Orientals. The level in Indians is somewhere in between.

During illness, body odour can give an indication and diagnoses on the state of our health and wellbeing. This is particularly more in case of oral breath. The unlikely smell of acetone is indicative of diabetes, a fishy odour indicates kidney trouble, the smell of garlic indicates food poisoning, chronic cystitis gives the smell of ammonia and those suffering with pellagra smell like sour bread. It is generally believed that animals use smell to attract mates. Pheromones are the fragrant hormones released by animals — from moths to canines — to attract members of the opposite sex. Although it is not yet been proven in humans, it seems logical to believe that humans might release a similar type of natural fragrance to attract potential mates.

Surveys have observed women describe men as smelling musky and likewise men describe women as smelling sweet. Little children in the survey were able to tell from the odour whether specific clothing was

worn by males or females.Androstenol occurring in human armpit sweat have been experimented as chemical messengers and found receptive by humans. Psychologists have carried out tests whereby a number of seats in a cinema were sprayed with Androstenol. It was found that these seats were mostly selected by women. Similarly, women were observed queuing at the pheromone treated telephone booths in railway stations even when untreated telephone booths were sometimes vacant. The presence of hormones affects a persons ability to smell, which, in turn, causes the production of more harmones.

Odour is believed to have an effect on human sexuality. Males kept in olfactory isolation from females reported diminished libido and likewise women experienced abnormal synchronisation of their menstrual cycles. Writer Alain Corbin in his book "The Foul and the Fragrant", remarks that from childhood to old age, man undergoes an aromatic progression from the lactic acid of infancy to the less acid and more mellow flavour of old age. Between the two extremes lies the fragrance of adolescence, particularly striking in girls than in boys. Puberty has a radical effect on male odour, but less impact on female odour, which stabilises earlier. Corbin, further adds, that puberty is not the deciding phase in odour development in a woman's life. Menstruation heightens the sex appeal of a girl during puberty, reminds her of her procreative role, but lends her only a temporary odour. The male sperm gives a woman a clear sensory identity in the same way as the act of copulation infuses the flesh of many females animals with a special aroma. In any case, one can easily say that whether or not humans are conscious of the physiological effect of odour, they do have a very important effect on emotion, memory, sex, health, and taste. Sexual attraction is based on scent, which gives credibility to the theory that romance is all chemistry.

However, the body's natural odour and not applied fragrances serve as a sexual magnet when the sexes are close to each other. Applied fragrances are only effective when they blend with ones own natural body odour. Is it not ironic that to make us attractive to the opposite sex, we bathe overselves squeaky-clean and then apply expensive fragrances that incorporate heavy scents reminiscent of the natural body odour!