

A study on fragrance, aroma and emotion

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■ **ABSTRACT** : Inhaling a pleasant aroma can be a very pleasurable experience and pleasant fragrances can improve our mood and sense of well being. Smell can evoke strong emotional responses and when we like or dislike any smell that is completely based on emotional connections. Under the present study a review on relationship of aroma to emotional and physical health was collected and this review article covers the areas of importance of aroma, role of aroma in various areas, relationship of aroma to emotional and physical health and aromatherapy and textile.

■ **KEY WORDS**: Aromatherapy, Essential oil, Olfaction

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Fragrance has been used since long back. There are evidences in history on use of fragrances. Noor Jahan daughter of Mirza Ghias Beg made attar from rose and she learned this art from her mother Asmat Begam. In her attempt to prepare rose water in huge vats, she discovered scented oil, which was the essential oil of rose. She rubbed it all over her and then told her husband about the discovery. In this way in the 16th century rose scent was discovered (<http://ahistoryblog.com>).

Olfactory pathway:

Aroma reaches to a receptor cell by diffusing through the air and physically contacting the receptor cells. There is cilia projection surrounded by mucous membrane in which the odour molecules dissolve. The odour molecule bind with receptor cell stimulates activation of a protein called G-protein. These events begin to process and an electric charge is generated

which give the signal that is sent off to the brain. A signal is relayed to the anterior olfactory nucleus, which is essentially a collection point for receptor signals. The signals are then directed to primary olfactory cortex this is the region of the brain responsible for the processing of the information.

After this the stimulated receptor, and odour molecule is rapidly destroyed and stimulation ended. In this way the smell sensory system is maintained. The Fig. 1 shows the sensing and perceiving pathway

How olfaction helps to trigger emotion:

Olfaction is a sense of smell and it is very different from our other senses, processed through different pathways of our brain. Smells are detected in the nose by the receptor cells of olfactory epithelium. Olfactory stimulation causes immediate physiological changes in blood pressure, muscle tension, skin temperature, heart rate and sleep/arousal states. Researcher believe that the

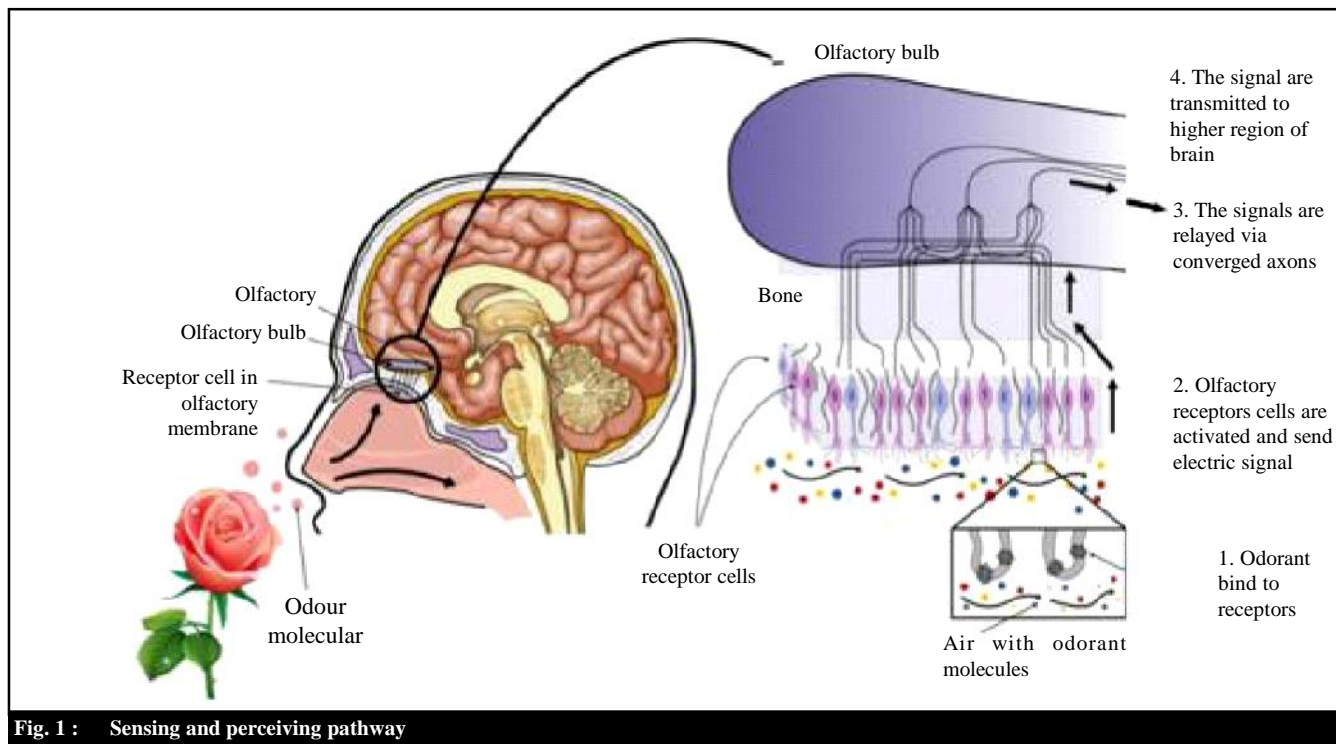


Fig. 1 : Sensing and perceiving pathway

essential oil trigger smell receptor in the nose, prompting the transmission of chemical messages along nerve pathways. So we should not wonder if someone says that happiness is under our nose because natural aroma has positive health effects. The fragrance of essential oil are claimed to enhance everything from emotional state to life span. Upon inhalation the molecules of odour travel directly to the nose where they are captured by olfactory membrane.

Aroma or fragrance is one of the chemical senses. We utilize these senses to sample our environment for information. There are various roles of aroma such as hazard warning, memory prompt, chemical signalling, flavour detector, aromatherapy, mate choice, dreams, ageing, health, hormones, and disease. The brain has a specified area for storage of aroma/fragrance associated with that specific physical object and surrounding.

Karl Grammer, in Vienna, has recently demonstrated that the smell of fear can be detected in the armpit secretions of people who watched a terrifying film (Ackerl and Grammer, 2002). The significance of this work is that a chemical signal is secreted in human sweat which communicates the emotion.

Aroma and memory are closely linked. Aroma evokes memories. We are attracted towards some

specific aroma/fragrance because we have some memories with that particular aroma/fragrance for an example the aroma of coffee in a book shop, only tells the brain to relax and read happily. A recent study in Germany has shown that smell can influence the quality and emotional expression of dreams. In this study a rose and some rotten eggs were put under the nose of a sleeping person. The quality of dreams for both the smells was reported different by the person. The smell of rose evoked pleasant emotions and rotten eggs did not evoke good emotions and the dreams were unpleasant.

In the work done by Martha McClintock, she has taken armpit swab from donor women at a certain phase of her menstruation cycle and put under the nose of other recipient women, it evoked an immediate response that the recipient women began her menstruation cycle. This condition is called as menstrual synchrony (Stern and McClintock, 1998). Women especially at reproductive age have more sense of smell. The increase in sense of smell is due to increase secretion of oestrogen hormone during pregnancy. Men rate women as more attractive during ovulation period and less attractive when in menstruation as per the aroma of their breath. Ageing and aroma both are important facts, that as we get older

our sense of smell decline. By the age of 80 years 80 per cent people have major smell dysfunction and 50 per cent are anosmic. Women also loss sense of smell in old age but comparatively women have better sense of smell than men, as per research.

Another very interesting character of aroma is that it is closely related to health. Anosmia is a medical condition in which persons loss their sense of smell and an olfactory loss is a predictor of death. Anosmia can also be caused by traumatic head injury. Someone born without sense of smell the state is called as congenital anosmia and some develop it in prominence of another disorder like Alzheimer's disease. A person suffering from Alzheimer's loses memory of aroma and fragrance also. The smell of body changes when we are ill. Different diseases have particular smell like small pox-sweet, pungent smell, diphtheria-mousy smell, diabetes-sweet (ketonic) smell etc.

Interestingly research indicate that mate choice is also on the basis of body odour as we like smell of genetically favourable partners, this comes from our immune system and we dislike smell of those whose immune system is very similar to ours. Recent work from Martha McClintock's lab in Chicago shows that women are able to detect minute differences in male immunotype by smell (Jacob *et al.*, 2002). We signal our immune status by smell because our body odour is determined by our Human leukocyte antigen (HLA) complex. This HLA complex determines our individual smell. HLA molecule may influence odour by binding peptides, which are secreted and activated by the bacteria on our skin (e.g. armpit) to make them volatile. These volatile molecules are our body odour. We prefer smell of people who have different HLA and we are repelled by the people who have similar HLA to ours. So even without knowing we choose our partners on the basis of smell. Infact body odour is the guiding factor in the procreation

of animals, as we can observe closely among dogs, horses, cats etc.

Aroma is also a factor with animals as horses can smell fear in human beings. Likewise the dog attacks only those from whom it can smell fear. Dogs have a much greater sense of smell than human beings. Their receptor has almost 20 times more the surface area as human receptors, and there is 100 times more receptor per square centimetre in a dog's nasal cavity than in human. Dogs can determine the direction of a human smell trail. A study by Hepper and wells (2005) examined how much olfactory information from this trail is required by dogs to determine direction. Dogs can determine the direction of footsteps of an individual. In a study done in UK cancer sniff dogs were discovered. In this study dogs were trained to sniff bladder cancer (Willis *et al.*, 2004).

Aromatherapy:

Aromatherapy is the use of natural fragrance to enhance health and promote feeling of well being. The aroma comes from essential oil extracted from medicinal aromatic plants. Each essential oil has a characteristic fragrance and active compound which enhances the physical and emotional well being of a person. The concept of aromatherapy has been around for thousands of years. Egyptians used different types of odours to treat different diseases and Greek physician even wrote books on essential oils and the healing properties of the essential oil. Today aromatherapy is popular not only in spas but also as a way to relieve labour pains, reduce stress, anxiety, promote restful sleep and several other physical ailments and other emotions.

How essential oils help with common complaints:

Essential oil are secondary plant metabolites synthesized in different parts of the plant such as leaves,

Table 1 : Common complaints and remedy done by essential oil

Complaint	Essential oil
Stress	Lavender, lemon, bergamot, peppermint, vetiver, pine, and ylang ylang
Insomnia	Lavender (Lee and Lee, 2006), chamomile, jasmine, benzoin, neroli, rose, lemon (Teruhisa <i>et al.</i> , 2006)
Anxiety	Lavender, bergamot, rose, clary sage, lemon, Roman chamomile and pine (www.health.com)
Depressed mood	Peppermint, chamomile, lavender, and jasmine (Hongratanaworakit, 2010)
Pain	Lavender, chamomile, clary sage, juniper, eucalyptus, rosemary,
Nausea and vomiting	Mint, ginger, lemon, orange, ginger, dill, fennel, chamomile, clary sage
Memory and attention	Sage, peppermint, and cinnamon (http://www.wju.edu)
Low energy	Rosemary, cardamom, cinnamon, clove, angelica, jasmine, tea tree,

flowers, stems roots and seeds etc. The essence of oil can impart medicinal effect separately from the aroma, but more often the medicinal component and aroma are intertwined (Buchbaur and Jirovetz, 1994). Some best known essential oils have therapeutic properties and these effect physical and emotional well being of human beings. Table 1 shows common complaints and remedy done by essential oil

Aromatherapy and textile:

There are different modes of application of aromatherapy include: aerial diffusion: for environmental fragrance or aerial disinfection, direct inhalation: for respiratory disinfection, as well as psychological effect and topical applications, for general massage, baths, compresses, therapeutic skin care. Aromatherapy can be infused into the textile material to promote health of consumers. In recent year textile materials have been found in application in the field of aroma therapeutic finish using essential oil. By these applications pharmaceutical and environment friendly ingredients are impregnated to the fabric. The desire for healthy life style and eco friendly trend is on increase that promotes health and well being of consumers. The use of fragrances enhances our well being of body, mind and soul. It alleviates mood. The olfaction directly plugs in with the brain where emotions and memories reside. Hence fragrances trigger emotions of all kind, happy, hungry, exciting, relaxing and rejuvenating, creative thinking and cleanliness. Thus impacting health wellness and also work environment.

The sense of smell is the most over powering sense, which compels behaviour and action of as it is perceived by the mind. Aroma communicates with the mind only in that way that governs actions. Sense of smell surprisingly has influence over our thoughts, moods, behaviour, mate choices, the immune system and endocrine system (hormone). There is silent communication through aroma and fragrance between brain and emotions. As we know that some fragrances are aphrodisiac in nature. Essential oils, hydrosols, concretes, absolutes, resins and balms are the building blocks of complex and evocative scents. Sometimes the fragrance resides in the rind of fruits, as with orange and pink grape fruit, sometimes in the roots as with ginger, sometimes in the woody stem as with cedarwood or sandalwood, or in the bark as with cinnamon,

sometimes in the leaves as with mint, basil and thyme, sometimes in the seed as with cardamom and cumin, and sometimes in the flower as with rose and jasmine. Perfume essences exist in many forms and on many levels of intensity. Aroma of coffee, aroma of baked bread, aroma of biryani, are the aroma's the mind is familiar with and these aroma's bring happiness to the mind. Aroma of fresh mint and mango tells us that summer has set in. Fragrance of cut grass brings vivid old memories, the fragrance of khus and mud after the rain drop is invigorating. The fragrances of a new car interior are the fragrances that make us spontaneously happy and the olfactory senses relax our brain and the nerves (Patterson and Aftel, 2004).

In today's environment where life is moving at a fast pace, stress and mental health have side by side taken an important place in lives of all human beings. After a very hectic day we want a relaxed environment and if a pleasant fragrance/aroma touches our nose then it stimulates our olfaction senses and relaxes our body and mind. The body is relaxed only when the mind is happy and relaxed.

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