

LOVE: Unravelling the Biochemistry behind it

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“EVERYTHING is fair in love and war”, “Love is blind”, “To be loved is the ultimate need of every living being”, etc. are some quotes which make this behaviour very popular and often puzzling to us. Love is not only about romanticism, songs in movies or going on a date with an individual to whom one feels attracted. It is one of organisms’ most complex and less studied behavioural expressions. What most people think of love as being an action or feeling governed by the small fist-shaped organ pounding against the left side of one’s chest is not the actual description of what it is.

Love is more of a behaviour significantly regulated by the brain, specifically by areas of the limbic system, pituitary and prefrontal cortex. The heart is merely an organ that reacts to the consequences of brain activity. Hence, the next time you find someone who has experienced a failed love, you are sure to blame the brain and spare the heart. Love is a biological phenomenon that is experienced deeply by all individuals. The existence and expression of love have created cultural and historical manifestations in monuments, art, poetry and music.

On the contrary, failing to reciprocate a love feeling, commonly denoted as “failed love”, can be

hazardous for an individual. The loss of loved ones forms an indelible imprint to carry with us for the rest of our lives. Most people do not realise that love is not just an emotional attachment or feeling towards someone or something. However, it underlies a complex biochemical and bio-physiological network of events that ultimately orchestrates the series of signalling molecules, culminating in the good feeling of love.

There should be a clear distinction between attraction, attachment and

lust, although each is associated with a pattern of behaviour called love. All the manifestations mentioned are governed by different brain areas and respective hormones, which profoundly affect the patterns of behaviour evoked by each. Attraction is a preliminary feeling that one experiences towards any individual, animal, place, etc., which should not be simulated with the much broader feelings of love and attachment.

The primary hormone that elevates when a person experiences a feeling of attraction is dopamine. Dopamine is released from the area of the brain called the hypothalamus, and its release is associated with the reward areas of the brain termed ventral tegmental area and caudate nucleus. Interestingly, the surge in dopamine negatively correlates with serotonin levels. It has been experimentally revealed that serotonin levels go down during periods of attraction. Dopamine is a magical hormone because it can make us do things which we otherwise may not consider doing. Hence, the initial period of an affair, which primarily involves attraction as the prime behavioural pattern, shows such frenzy and energetic behaviour that does not include the areas of the brain associated with critical thinking, reasoning, arguing, etc.

Norepinephrine or Noradrenaline, a hormone from the adrenal medulla categorised as catecholamines and primarily related to emergency

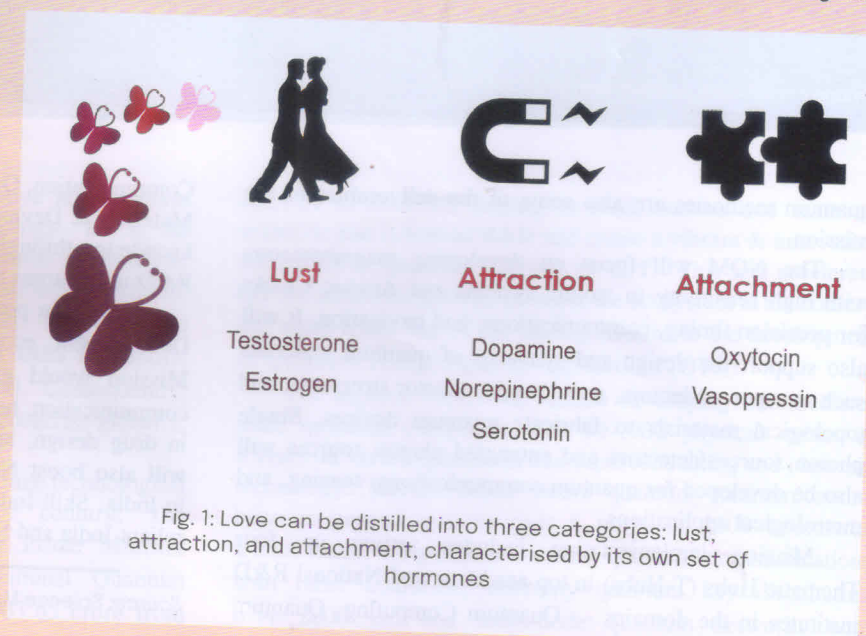


Fig. 1: Love can be distilled into three categories: lust, attraction, and attachment, characterised by its own set of hormones