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Computational Analysis and Daily Application of the Key Neurotransmitters Involved in Happiness: Dopamine, Oxytocin, Serotonin, and Endorphins

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Abstract : Happiness and pleasure are a result of dopamine, oxytocin, serotonin, and endorphin levels in the body. In order to increase the four neurochemical levels, it is important to associate daily activities with its corresponding neurochemical releases. This includes setting goals, maintaining social relationships, laughing frequently, and exercising regularly. The likelihood of experiencing happiness increases when all four neurochemicals are released at the optimal level. The achievement of happiness is important because it increases healthiness, productivity, and the ability to overcome adversity. To process emotions, electrical brain waves, brain structure, and neurochemicals must be analyzed. This research uses Chemcraft and Avogadro to determine the theoretical and chemical properties of the four neurochemical molecules. Each neurochemical molecule's thermodynamic stability is calculated to observe the efficiency of the molecules. The study found that among dopamine, oxytocin, serotonin, alpha-, beta-, and gamma-endorphin, beta-endorphin has the lowest optimized energy of 388.510 kJ/mol. Beta-endorphin, a neurotransmitter involved in mitigating pain and stress, is the most thermodynamically stable and efficient molecule that is involved in the process of happiness. Through examining such properties of happiness neurotransmitters, the science of happiness is better understood.

Keywords : happiness, neurotransmitters, positive psychology, dopamine, oxytocin, serotonin, endorphins
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