

The neural basis of the complex mental task of meditation: neurotransmitter and neurochemical considerations.

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Meditation is a complex mental process involving changes in cognition, sensory perception, affect, hormones, and autonomic activity. Meditation has also become widely used in psychological and medical practices for stress management as well as a variety of physical and mental disorders. However, until now, there has been limited understanding of the overall biological mechanism of these practices in terms of the effects in both the brain and body. We have previously described a rudimentary neuropsychological model to explain the brain mechanisms underlying meditative experiences. This paper provides a substantial development by integrating neurotransmitter systems and the results of recent brain imaging advances into the model. The following is a review and synthesis of the current literature regarding the various neurophysiological mechanisms and neurochemical substrates that underlie the complex processes of meditation. It is hoped that this model will provide hypotheses for future biological and clinical studies of meditation