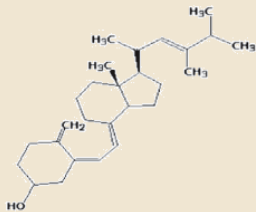


# How Vitamin D May Affect Sleep Regulation



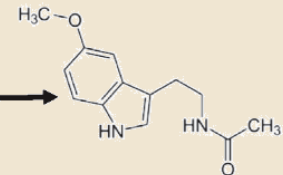
**Vitamin D**

Vitamin D binds receptors in areas of the brainstem (the anterior and posterior hypothalamus, substantia nigra, midbrain central grey matter, raphe nuclei, and in the nucleus reticularis pontisoralis and caudalis) involved in sleep regulation.



**Brain**

Vitamin D can regulate tryptophan conversion into 5-hydroxytryptophan through actions on tryptophan hydroxylases (TPH)-2, which expresses VDRE at the gene level. In turn, 5-hydroxytryptophan is metabolized to serotonin to produce the sleep hormone, melatonin.



**Melatonin**

