

# Dual effect of serotonin on the dendritic growth of cultured hippocampal neurons: Involvement of 5-HT1A and 5-HT7 receptors

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© 2017 Elsevier Inc. Serotonin acts through its receptors (5-HTRs) to shape brain networks during development and modulates essential functions in mature brain. The 5-HT1AR is mainly located at soma of hippocampal neurons early during brain development and its expression gradually shifts to dendrites during postnatal development. The 5-HT7R expressed early during hippocampus development, shows a progressive reduction in its expression postnatally. Considering these changes during development, we evaluated in cultured hippocampal neurons whether the 5-HT1AR and 5-HT7R change their expression, modulate dendritic growth, and activate signaling pathways such as ERK1/2, AKT/GSK3 $\beta$  and LIMK/cofilin, which may sustain dendrite outgrowth by controlling cytoskeleton dynamics. We show that mRNA levels of both receptors increase between 2 and 7 DIV; however only protein levels of 5-HT7R increase significantly at 7 DIV. The 5-HT1AR is preferentially distributed in the soma, while 5-HT7R displays a