

# **The role of serotonin signaling in diet-induced memory enhancement**

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Progressive cognitive decline has become an enormous burden for modern society. Much effort has been focused on the prevention and treatment of age-related brain dysfunction. Dietary (or calorie) restriction (DR) is recognized as the most powerful intervention available to date; it not only increases lifespan across species, but also delays the onset of age-related diseases. In this study, we have explored the molecular mechanism of DR-induced memory enhancement and demonstrate that the serotonergic signaling is indispensable for this process. DR-induced cognitive plasticity is also correlated with structural alterations such as reduced dendritic length and complexity, and increased spine density of hippocampal neurons. These molecular and structural alterations under DR may well be a compromise that permits better communication among neurons. These findings may have implications for protecting neurons from insults and promoting mental fitness.