

Quercetin alleviate cognitive decline in ovariectomised mice by potentially modulating histone acetylation homeostasis

Researchers at DBT's National Agri Food Biotechnology Institute (NABI), Mohali attempted to study the altered histone acetylation homeostasis mediated changes in cognition following ovariectomy and evaluate the protective effect of quercetin. Team found a significant reduction in estradiol levels with subsequent depletion in spatial memory and learning functions assessed by Morris water maze, Novel object recognition test and Elevated plus maze, were observed in ovariectomized (OVX) mice. This phenomenon was linked to the decline in neuroplasticity markers like Brain derived neurotrophic factor, Synaptophysin, Post synaptic density in the cortex and hippocampus of OVX animals.

So far synergism between estrogen and histone tail acetylation-mediated memory formation is not clearly understood. In this study, the histone acetyl-transferase (HAT)/histone deacetylase (HDAC) balance was significantly disrupted in cortex and hippocampus of OVX mice. Quercetin supplementation to OVX mice for 4 weeks was able to ameliorate cognitive impairment by restoring HAT/HDAC homeostasis through extracellular signal regulated kinases activation and reversing alterations in neuroplasticity markers in cortex and hippocampus of OVX mice. Taken together, our results suggest that quercetin alleviate ovariectomy-induced cognitive decline by modulating histone acetylation homeostasis. This work was published the journal of *Nutritional Biochemistry*.

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