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Effect of *Melissa officinalis* on rat hippocampal and cortex slices subjected to oxygen and glucose deprivation

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Cerebral stroke is 3rd leading cause of death after cancer and heart attack worldwide. Free radicals play key role in brain injury. The results of the present investigation demonstrate that Oxygen-glucose deprivation (OGD) followed by re-oxygenation led to cell damage/death via an increase in free radical's production in rat brain hippocampal and cortex slices compared with control (non-OGD) after 2h OGD followed by 1h reperfusion. *Melissa officinalis* at concentration 40 µg/ml displayed potential role in neuro-protection against OGD, followed by re-oxygenation in mitochondrial viability assays *in vitro*. In addition, *Melissa officinalis* decreased or slowdown the production free radical in the supernatant and slices homogenate of hippocampal and cortex at the end of 2h OGD followed by 1h reperfusion. Furthermore, higher concentrations of *Melissa officinalis* slightly showed neurotoxicity for hippocampal and cortex slices which could be due to a pro-oxidant effect.

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