



Acute treatment with red wine polyphenols protects from ischemia-induced excitotoxicity, energy failure and oxidative stress in rats

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Résumé en anglais	<p>Red wine polyphenolic compounds (RWPC) possess numerous neuroprotective activities that may be beneficial for treating cerebral ischemia. To investigate the in vivo effects of an acute treatment with RWPC during stroke, male Wistar rats were subjected to transient ischemia for 90 min and immediately treated with RWPC. The extracellular concentrations of excitatory amino acids, free radical scavengers and energy metabolites during occlusion and reperfusion were monitored using microdialysis. The brain lesions were measured 24 h after reperfusion using immunohistological staining. We found that acute treatment with RWPC significantly reduced the burst of amino acids glutamate, aspartate and taurine in response to ischemia and increased the levels of free radical scavengers ascorbic and uric acids during occlusion or at early reperfusion, respectively. The concentration of glucose was improved during occlusion whereas the level of lactate strongly decreased during reperfusion in RWPC treated animals, suggesting an increased use of this substrate by surviving neurons. RWPC also significantly improved blood flow during reperfusion and brain tissue preservation as observed 24 h after MCAO in treated animals. These findings strongly suggest that RWPC are agents able to fight against the excitotoxic, oxidative pathways and metabolic dysfunction induced by cerebral ischemia.</p>
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