# Nicotinamide prevents the long-term effects of perinatal asphyxia on apoptosis, non-spatial working memory and anxiety in rats

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There is no established treatment for the long-term effects produced by perinatal asphyxia. Thus, we investigated the neuroprotection provided by nicotinamide against the effects elicited by perinatal asphyxia on hippocampus and behaviour observed at 30-90 days of age. Asphyxia was induced by immersing foetuses-containing uterine horns, removed from ready-to-deliver rats into a water bath at 37°C for 20 min. Caesarean-delivered siblings were used as controls. Saline or nicotinamide (0.8 mmol/kg, i.p.) was administered to control and asphyxia-exposed animals 24, 48, and 72 h after birth. The animals were examined for morphological changes in hippocampus, focusing on delayed cell death and mossy fibre sprouting, and behaviour, focusing on cognitive behaviour and anxiety. At the age of 30-45 days, asphyxia-exposed rats displayed (1) increased apoptosis, assessed in whole hippocampus by nuclear Hoechst staining, and (2) increased mossy fibre sprouting, restricted to the stratum oriens of d