

4-phenylbutyrate

Sodium phenylbutyrate is a salt of an aromatic fatty acid, 4-phenylbutyrate (4-PBA) or 4-phenylbutyric acid.

Diffuse axonal injury (DAI) patients are frequently accompanied by adverse sequelae and psychiatric disorders, such as anxiety, leading to a decreased quality of life, social isolation, and poor outcomes. However, the mechanisms regulating psychiatric disorders post-DAI are not well elucidated. Previous studies showed that [endoplasmic reticulum stress](#) functions as a pivotal factor in neurodegeneration disease. In a study, Huang et al., showed that DAI can trigger ER stress and unfolded protein response (UPR) activation in both the acute and chronic periods, leading to cell death and anxiety disorder. Treatment with 4-phenylbutyrate (4-PBA) is able to inhibit the UPR and cell apoptosis and relieve the anxiety disorder in our DAI model. However, later (14 days post-DAI) 4-PBA treatment can only restore the related gene expression of ER stress and UPR but not the psychiatric disorder. Therefore, the early (5 mins after DAI) administration of 4-PBA might be a therapeutic approach for blocking the ER stress/UPR-induced cell death and anxiety disorder after DAI ¹⁾.

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Huang GH, Chen K, Sun YY, Zhu L, Sun ZL, Feng DF. 4-Phenylbutyrate ameliorates anxiety disorder by inhibiting endoplasmic reticulum stress following diffuse axonal injury. J Neurotrauma. 2018 Dec 22. doi: 10.1089/neu.2018.6048. [Epub ahead of print] PubMed PMID: 30582423.

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