

TAR DNA-binding protein 43

TAR DNA-binding protein 43 (TDP-43, transactive response DNA binding protein 43 kDa), is a protein that in humans is encoded by the TARDBP gene.

TAR DNA-binding protein 43 ([TDP-43](#)) is a major protein component of pathological inclusions in [amyotrophic lateral sclerosis](#) and [frontotemporal dementia](#). Reducing aberrant aggregation of TDP-43 is a potential approach to prevent [cell death](#). To investigate whether DJ-1 might inhibit TDP-43 aggregation to exert a protective effect in oxidative stress-induced injury, Lei et al. tested the protein level and subcellular localization of TDP-43 and [DJ-1](#) in SH-SY5Y cells transfected with wild-type DJ-1, DJ-1 mutant (L166P) cDNA, or DJ-1 siRNA. They showed that [oxidative stress](#) induced by paraquat leads to the formation of cytosolic TDP-43 aggregation in SH-SY5Y cells. DJ-1 overexpression decreases paraquat-induced cytoplasmic accumulation of TDP-43 in SH-SY5Y cells and protects against paraquat-induced cell death. Transfection of DJ-1 L166P mutant or DJ-1 siRNA leads to increased cytosolic aggregation of TDP-43 in paraquat-treated SH-SY5Y cells and promotes cell death. These data suggest that [DJ-1](#) may protect against oxidative stress-induced cell death through the suppression of cytoplasmic TDP-43 aggregation ¹⁾.

¹⁾

Lei Y, Zhang ZF, Lei RX, Wang S, Zhuang Y, Liu AC, Wu Y, Chen J, Tang JC, Pan MX, Liu R, Liao WJ, Feng YG, Wan Q, Zheng M. DJ-1 Suppresses Cytoplasmic TDP-43 Aggregation in Oxidative Stress-Induced Cell Injury. J Alzheimers Dis. 2018 Oct 22. doi: 10.3233/JAD-180460. [Epub ahead of print] PubMed PMID: 30372676.

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