

# NEUROPROTECTIVE POTENTIAL OF CRANBERRY JUICE AGAINST PARKINSON'S DISEASE

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Cranberry juice (CJ) is a rich source of polyphenols with strong antioxidant activity believed to contribute to this fruit's wide range of health benefits. However, to date, our knowledge of cranberry neuroprotective potential is very scarce and limited to only a few *in vitro* studies. Recently, we have reported that treatment with CJ controls oxidative stress in several organs with the most noticeable effect in the brain. In this study, we examined the capability of cranberry juice for protection against Parkinson's disease (PD) in a rat model of parkinsonism induced by rotenone (ROT). Wistar rats were given the treatment with CJ in a dose of 500 mg/kg b.w./day (*i.g.*) and injected with ROT (1.3 mg/kg b.w./day, *s.c.*) from the 11th day. The experiment lasted a total of 45 days, including 10 days pre-treatment with CJ and 35 days combined treatment with CJ and ROT. To evaluate its neuroprotective effect, microscopic examination, determination of inflammation and apoptosis markers, and  $\alpha$ -synuclein level were performed in the midbrain.

Our results indicated that the CJ treatment provided neuroprotection as evidenced by enhancement of neuronal survival, which correlated well with decreased expression of pro-apoptotic caspase-9 and Bax and normalization of cytochrome c level. Importantly, the treatment with CJ declined  $\alpha$ -synuclein level. The expression of tumor necrosis factor-alpha (TNF- $\alpha$ ) was similar across all groups with no statistically significant differences.