



Protective Effects of Hydroxytyrosol from Diabetic Peripheral Neuropathy in Rodents: Implications of Antioxidant and Anti-Inflammatory Effects

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SUMMARY. Peripheral neuropathy is one of the common complications of diabetes. Hydroxytyrosol (HT), the polyphenol of olive oil, is well studied antioxidant with anti diabetic efficacy. In this context, the main objective of this study is to explore the potential of HT in preventing peripheral neuropathy, which is a major vascular complication of diabetes. We employed highfat diet and low dose streptozotocin to induce diabetes. After induction of diabetes and grouping, the animals received HT treatment for six weeks at three different doses (10, 50, and 100 mg/kg). After the end of six weeks treatment with HT, nerve function, antioxidant and anti-inflammatory parameters were evaluated. HT was found to be effective in preventing biochemical impairments in diabetic rats by protecting against oxidative stress and improved the levels of endogenous antioxidants. Besides tumor necrosis factor α (TNF- α) and interleukin-6 (IL-6) levels were also low in HT treated when compared to untreated group. From this study we assume that HT could effectively prevent diabetic neuropathy (DN).

RESUMEN. La neuropatía periférica es una de las complicaciones comunes de la diabetes. El hidroxitiroso (HT), polifenol del aceite de oliva, es un antioxidante bien estudiado con eficacia contra la diabetes. En este contexto, el objetivo principal de este estudio es explorar el potencial de TH en la prevención de la neuropatía periférica, que es una complicación vascular mayor de la diabetes. Empleamos dieta alta en grasas y baja dosis de estreptozotocina para inducir la diabetes. Después de la inducción de la diabetes, los animales recibieron tratamiento con HT durante seis semanas a tres dosis diferentes (10, 50 y 100 mg/kg). Después del final de tratamiento de seis semanas con HT, la función nerviosa y los efectos antioxidante y anti-inflamatorio fueron evaluados. Se encontró que HT era eficaz en la prevención de alteraciones bioquímicas en ratas diabéticas mediante protección contra el estrés oxidativo y mejora de los niveles de antioxidantes endógenos. Además los niveles del factor de necrosis tumoral α (TNF- α) y la interleucina-6 (IL-6) eran también bajos en animales tratados con HT en comparación con el grupo no tratado. A partir de este estudio se asume que la HT puede prevenir con eficacia la neuropatía diabética (ND).

KEY WORDS: antioxidant, diabetic neuropathy, hydroxytyrosol, motor nerve conduction velocity, oxidative stress.

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