



## Anti-oxidative Phytochemicals from *Phyllostachys nigrae* Can Ameliorate NG108-15 Cells Injury Induced by H<sub>2</sub>O<sub>2</sub> via Response to Oxidative Stress

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**SUMMARY.** To discover the anti-oxidative phytochemicals from the leaves of *Phyllostachys nigra* and evaluate the activity of these compounds for the treatment of Alzheimer's disease, phytochemical studies have led to the identification of 15 compounds including orientin (1), isoorientin (2), vitexin (3), isovitexin (4), tricic (5), tricic-7-O-β-D-glucopyranoside (6), luteolin (7), luteolin-7-O-β-D-glucopyranoside (8), *p*-hydroxy-cinnamic acid (9), caffeic acid (10), ferulic acid (11), chlorogenic acid (12), vanillic acid (13), β-sitosterol (14) and daucosterol (15). Then, their anti-oxidative and neuroprotective activities *in vitro* were carried out. The results showed the anti-oxidative constituents can ameliorate the NG108-15 cells injury induced by H<sub>2</sub>O<sub>2</sub> through proliferating NG108-15 cells, reducing the production of malondialdehyde, decreasing the activity of lactate dehydrogenase, increasing the activity of superoxide dismutase, maintaining the mitochondrial membrane potential and blocking the activation of caspase-3, which confirms the mechanism for the neuroprotective activity of these natural compounds is the response to oxidative stress.

**RESUMEN.** Para descubrir los componentes antioxidantes de las hojas de *Phyllostachys nigra* y evaluar la actividad de estos compuestos para el tratamiento de la enfermedad de Alzheimer, los estudios fitoquímicos han conducido a la identificación de 15 compuestos que incluyen a orientina (1), isoorientina (2), vitexina (3), isovitexina (4), tricina (5), tricina-7-O-β-D-glucopiranosido (6), luteolina (7), luteolina-7-O-β-D-glucopiranosido (8), ácido hidroxicinámico (9), ácido cafeico (10), ácido ferúlico (11), ácido clorogénico (12), ácido vanílico (13), β-sitosterol (14) y daucosterol (15). Luego se determinaron sus actividades antioxidantes y neuroprotectoras *in vitro*. Los resultados mostraron que los componentes antioxidantes pueden mejorar la lesión de las células NG108-15 inducida por H<sub>2</sub>O<sub>2</sub> a través de la proliferación de células NG108-15, reduciendo la producción de malondialdehído, disminuyendo la actividad de lactato deshidrogenasa, aumentando la actividad de la superóxido dismutasa, manteniendo el potencial de la membrana mitocondrial y bloqueando la activación de caspasa-3, lo que confirma el mecanismo de la actividad neuroprotectora de estos compuestos naturales es la respuesta al estrés oxidativo.

**KEY WORDS:** *Phyllostachys nigrae*, anti-oxidative phytochemicals, NG108-15 cells, Alzheimer's disease

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