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Oral Sessions

Recovery from spinal cord injury via M2 microglial polarization induced by Polygalae Radix

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Spinal cord injury (SCI) is a refractory neurodegenerative disease caused by inflammation. M1 microglia induce inflammation, whereas M2 microglia suppress inflammation and show neuroprotective effects. After SCI, M1 cells are predominant compared with M2 cells. Therefore, increasing the predominance of M2 microglia relative to that of M1 microglia is expected to improve SCI. We aimed to evaluate the active constituents of an herbal medicine that induced M2 predominance and investigate the effects of this medicine in SCI model mice. Herbal medicines inducing M2 were screened using cultured microglia. As a result, Polygalae Radix (PR) was found to induce M2 predominance. Oral administration of PR improved motor function in SCI model mice and showed a tendency to increase M2 microglia and protect from axonal degeneration in injured spinal cords. Sibiricoside A5 and 3,6'-disinapoyl sucrose were identified in the spinal cord after oral administration of PR. These constituents induced M2 predominance in cultured microglia. Above results indicated that sibiricoside A5 and 3,6'-disinapoyl sucrose were transferred to the spinal cord after oral administration of PR, induced M2 predominance of microglia, and improved motor function in spinal cord injured mice. PR may be a promising candidate for the treatment of SCI by inducing M2 predominance.