Fructus mume (FM), a processed fruit of *Prunus mume*, has been used as a herbal medicine for many years in Asian countries. We previously reported that Fructus mume exerts anti-inflammatory effects in a model of chronic cerebral hypoperfusion, a key etiological factor of vascular dementia. The present study was performed to investigate the protective effects of a 70% ethanol extract of FM on the inflammatory response and cholinergic dysfunction in a model of chronic cerebral hypoperfusion induced by bilateral common carotid artery occlusion (BCCAo) in Wistar rats. Rats were assigned to three experimental groups: sham plus vehicle, BCCAo plus vehicle, and BCCAo plus FM extract (200 mg/kg). FM was administered by oral gavage from days 21 to 42 following BCCAo. Glial cell numbers were measured in the white matter and hippocampus. The hippocampal expression of proinflammatory cytokines, angiotensin-II (Ang-II), receptor for advanced glycation end products (RAGE), and mitogen-activated protein kinase (MAPKs) was also evaluated. Choline acetyltransferase (ChAT) levels in the hippocampus and basal forebrain were examined. Rats with BCCAo showed an increase in the number of glial cells and levels of proinflammatory cytokines, Ang-II, RAGE, and MAPKs, all of which were significantly attenuated by FM treatment. FM administration also restored ChAT expression in the basal forebrain and hippocampus following chronic BCCAo. These results suggest that FM is a potentially valuable drug candidate for the treatment of vascular dementia.