Propofol and thiopental are representative of general anaesthetics with neuroprotective properties. We investigated whether propofol or thiopental is associated with the assembly of amyloid β-protein from the cell surface of neurons. The propofol and thiopental treatment induced a decrease in GM1 ganglioside levels in detergent-resistant membrane microdomains of neurons. The propofol- and thiopental-induced effects on GM1 ganglioside levels were regulated by a gamma aminobutyric acid A receptor. Furthermore, propofol and thiopental failed to induce formation of fibrils from soluble amyloid β-protein and suppressed the acceleration of GM1 ganglioside-induced fibril formation. Moreover, the assembly of amyloid β-protein in cultures of neurons was significantly decreased by propofol and thiopental. These results suggest that propofol and thiopental inhibit amyloid β-protein assembly by decreasing the distribution of GM1 ganglioside-rich microdomains in neurons.