Pharmacological treatment for cerebral ischemia can not attain sufficiently high concentrations of drug in the cerebrospinal fluid (CSF) without precipitating systemic effect. To overcome this limitation of current drug therapy, we have developed a sustained-release preparation of protein kinase inhibitor, fasudil, by means of liposomes. Single intrathecal injection of liposomal fasudil resulted in significant neuroprotective effect without any adverse effect in a rat model of ischemia. Although we have confirmed that liposomal fasudil can be safely applied in the CSF, the distribution of liposome and/or drug in the cerebrospinal space have remained to be understood. In this study, therefore, we investigated distribution of liposomes after a single intrathecal injection. Radio-labelled liposomes were injected into lateral ventricle and the radio-activity was measured in the CSF. The liposomes were rapidly eliminated from cerebrospinal space. The distribution of intrathecally injected liposome was visualized with Planer Positron Imaging System (PPIS). Interestingly, through our study, the distribution patterns of liposomes were different when the volume, rate and site of injection were changed. This finding suggests that the intrathecal distribution of liposomes and the drug associated with the liposomes could be controlled by changing condition of administration.