Effect of *Ginkgo biloba* extract on apoptosis of brain tissues in rats with acute cerebral infarction and related gene expression

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ABSTRACT. We investigated the effect of *Ginkgo biloba* extract on apoptosis of brain tissues in rats with acute cerebral infarction and apoptosis-related gene expression. Rat models of acute cerebral infarction were constructed using the suture method, and randomly divided into the control group, model, and treatment groups. In the treatment group, 4 mg/kg *G. biloba* extract was intravenously injected into the rat tail vein. Phosphate-buffered saline solution was injected in the model group. Seventy-two hours after treatment, rats were euthanized, and brain tissues were removed to analyze the changes in caspase-3, B-cell lymphoma 2 (Bcl-2), and Bcl-2-associated X protein (Bax) mRNA and protein levels, and variation in brain tissue cells’ apoptosis indices was measured. Compared with the control group, the model and treatment groups showed significantly upregulated caspase-3, Bcl-2, and Bax mRNA and protein levels in brain tissues, but remarkably downregulated Bcl-2 mRNA and protein levels (P < 0.05). After treatment, in treatment group brain tissues, caspase-3 and Bax mRNA and protein levels were significantly lower than those in the model group, while Bcl-2 mRNA and protein levels were higher than
that in the model group (P < 0.05). The model and treatment groups showed increased cell apoptosis indices of brain tissues compared to the control group; after treatment, the apoptosis index in the treatment group was significantly downregulated compared with that in the model group (P < 0.05). In conclusion, *G. biloba* extract significantly reduced apoptosis in rat brain tissue cells with acute cerebral infarction and thus protected brain tissues.

**Key words:** Acute cerebral infarction; Apoptosis index; Caspase-3; B-cell lymphoma 2