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Protective effect of *Ginkgo* flavonoids, amifostine, and leuprorelin against platinum-induced ovarian impairment in rats

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ABSTRACT. Platinum-induced ovarian impairment is a consequence of treatment for malignant ovarian tumors. We compared the protective effects of *Ginkgo* flavonoids, amifostine, and leuprorelin on ovarian impairment in rats. Fifty rats were randomly divided into the A, B, C, D, and E groups, which were given saline, cisplatin, cisplatin plus *Ginkgo* flavonoids, cisplatin plus amifostine, and cisplatin plus leuprorelin, respectively. Ovarian weight was significantly greater in groups C and D compared with group B (83.5 ± 6.7 and 86.8 ± 10 *vs* 56.8 ± 5.4 mg). The total follicle numbers were higher in groups C, D, and E than in group B (60.5 ± 3.9, 63.8 ± 5.1, and 67.7 ± 3.5 *vs* 49.6 ± 4.5), and the apoptotic index was reduced in groups C, D, and E compared with group B (35.7 ± 2.0, 37.4 ± 1.6, and 30.5 ± 2.9 *vs* 65.3 ± 2.9%). The ovaries in groups B, C, and D had higher protein and mRNA expression levels of cytoplasmic Cytochrome c (Cyt-c) and apoptotic protease activating factor-1 (Apf-1) compared to group A; the Cyt-c mRNA expression was five-fold higher. The mRNA expression of Cyt-c and Apf-1 were significantly lower in groups C, D, and E compared with group B. Administration of leuprorelin, flavonoids, or amifostine protected rats against the ovarian impairment induced by

prior intraperitoneal injection of cisplatin. The efficacy of leuprorelin was superior to that of *Ginkgo* flavonoids and amifostine, but there was no difference between the effects of *Ginkgo* flavonoids and amifostine.

Key words: Platinum-induced ovarian impairment; *Ginkgo* flavonoids; Amifostine; Leuprorelin

