EFFECTS OF ANTIDEPRESSANT MEDICATION AND HERBAL REMEDY ON SOME ORGANS OF MICE EMBRYOS DURING PREGNANCY

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Abstract

Depression has been known as a major public health problem. Antidepressants are used commonly in pregnancy. Physicians who provide health care for pregnant women with depression must balance, maternal well-being with potential fetal risks of these medications.

The present study aimed to evaluate, the safety of maternal treatment with Fluoxetine (Flux) and St. John's Wort (SJW) on the cerebral cortex, liver and lung of mice embryos. Also, this study was carried out on the cortex and brain stem of mothers and fetuses to evaluate the monoamines level and the whole brain oxidative markers (Malondialdehyde (MDA), Nitric oxide (NO), Glutathione reduced (GSH), oxidized (GSSG) and GSH/GSSG) in different treated groups. Moreover, the depressed behavior of investigated animals was evaluated by open field test. Pregnant female mice were injected once subcutaneously (S.C.) by 0.1mg/kg of reserpine on gestational day (GD) 7, and received daily 7.5 mg/kg of Flux or received daily 70 mg/kg of SJW by oral gavage from GD 8 to GD 14.

In all treated groups the mean increase in maternal body weight was less than that of the control group. Also, in groups treated with Flux or SJW there was a fetal growth retardation and various signs of malformations were observed.

The cerebral cortex of 18-days-old fetuses of all treated groups exhibited some histopathological features including vacuolation in the neuropile of most layers of the cerebral cortex. The pyramidal cells showed signs of pyknosis and karyolysis of their nuclei.

The liver of 18-days-old fetuses of all treated groups showed different phases of histopathological changes in the form of central vein congestion, fatty degeneration and necrosis.

The lung of 18-days-old fetuses of all treated groups showed congestion of the blood vessels, thickening of the interalveolar wall and scattered cell debris in the lumina of the alveoli.

In the open field test there was a significant improvement in behavior of depressed mother after treatment with Flux or SJW.

There was a significant increase in the cortex and brain stem of pregnant and aborted mothers (NE, DA and 5HT) contents and whole brain GSH and GSH/GSSG ratio contents in all treated groups as compared to the depressed group. Moreover, there was a significant decrease in whole brain MDA content, GSSG content and NO content in all treated groups as compared to the depressed group.

Moreover, there was a significant increase in brain stem of fetuses (NE and 5HT) and a significant increase in brain stem and cortex DA in all treated groups as compared to the fetuses of the depressed group. Moreover, there was a significant increase in the total GSH contents in all treated groups as compared to the fetuses of the depressed group.

Key words: Antidepressant, Fluoxetine, St. John's Wort, Reserpine, mice fetuses, liver, lung, cerebral cortex, open field test, Monoamines Neurotransmitters, MDA, NO and Glutathione contents.

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