

Letter to the editor:

CURCUMIN'S EFFECTS ON THE REPRODUCTIVE AND NERVOUS SYSTEMS

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Dear Editor,

Curcumin extracted from the **Curcuma longa** rhizome is the major constituent of turmeric and used as a spice in food preparation. Since this substance is available everywhere and could be obtained with a reasonable price, we decided to conduct various researches on it thoroughly. It was considered as a research topic/priority in Histomorphometry and Stereology Research Center of Shiraz University of Medical Sciences as it could be recommended to public after passing the biological examinations in animal and human models. Therefore, evaluation of protective effects of curcumin began in 2010 in our research centre. In the first studies, different dosages of curcumin were assessed to find the safe doses of it. This survey showed that 100 mg/kg/day was an optimum dose in rats (Kheradpezhohu et al., 2010). The reproductive and nervous systems health are of importance in the University and have been given priorities. Therefore, in the next steps of the research, we focused on the protective properties of curcumin on the male reproductive system in the experimental toxicity in animal models (Noorafshan et al., 2010, 2011a; Noorafshan and Karbalay-Doust, 2012; Karbalay-Doust and Noorafshan, 2011). The research on curcumin was followed by evaluation of curcumin's effects on peripheral and central nervous systems. The peripheral nerve injuries (sciatic nerve) were induced in rat models and co-treatment of curcumin in these conditions assessed (Noorafshan et al., 2011b, c). Since emotional stress are the indispensable parts of life, the next evaluations were arranged to show whether curcumin could improve behavioural and structural changes of the brain after induction of stress and depression models (Noorafshan et al., 2013a, 2014, 2015a, b). The preservative agents and artificial dyes are used commonly in food and drug industries, and their adverse impacts on the mammalian bodies have been approved. Nevertheless, finding shielding agents that could be used after consuming these substances has received less attention. Therefore, curcumin's effects were assessed in the brain tissue after exposure to preservative agents and artificial dyes (Karimfar et al., 2014; Noorafshan et al., 2013b, 2015c). Publishing of these articles draw attention of the journal entitled Current Pharmaceutical Design. We were asked to write a review for them in 2013 and up to now it has been cited by many authors (Noorafshan

and Ashkani-Esfahani, 2013). In above-mentioned research, curcumin was able to protect the tissues even though no obvious adverse effects were seen except for the formation of renal and bladder stone (unreported report).

In continuation of the above-mentioned articles, it is our honour to present our works in EXCLI Journal.

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Conflict of interest

The authors declare no conflict of interest.

REFERENCES

- Karbalay-Doust S, Noorafshan A. Ameliorative effects of curcumin on the spermatozoon tail length, count, motility and testosterone serum level in metronidazole-treated mice. *Prague Med Rep.* 2011;112:288-97.
- Karimfar MH, Noorafshan A, Rashidiani-Rashidabadi A, Poostpasand A, Asadi-Golshan R, Abdollahifar MA, et al. Curcumin prevents the structural changes induced in the rats' deep cerebellar nuclei by sodium metabisulfite, a preservative agent. *Asian Pac J Trop Med.* 2014;7S1:S301-5.
- Kheradpezhoh E, Panjeshahin MR, Miri R, Javidnia K, Noorafshan A, Monabati A, et al. Curcumin protects rats against acetaminophen-induced hepatorenal damages and shows synergistic activity with N-acetyl cysteine. *Eur J Pharmacol.* 2010;628:274-81.
- Noorafshan A, Ashkani-Esfahani S. A review of therapeutic effects of curcumin. *Curr Pharm Des.* 2013;19:2032-46.
- Noorafshan A, Karbalay-Doust S. Curcumin protects the seminal vesicles from metronidazole-induced reduction of secretion in mice. *Acta Medica (Hradec Kralove).* 2012;55:32-6.
- Noorafshan A, Karbalay-Doust S, Valizadeh A, Aliabadi E, Mirkhani H. Ameliorative effects of curcumin on the seminiferous epithelium in metronidazole-treated mice: a stereological study. *Toxicol Pathol.* 2010;38:366-71.
- Noorafshan A, Karbalay-Doust S, Valizadeh A, Aliabadi E. Ameliorative effects of curcumin on the structural parameters of seminiferous tubules and Leydig cells in metronidazole-treated mice: a stereological approach. *Exp Toxicol Pathol.* 2011a;63:627-33.
- Noorafshan A, Omidi A, Karbalay-Doust S. Curcumin protects the dorsal root ganglion and sciatic nerve after crush in rat. *Pathol Res Pract.* 2011b;207:577-82.
- Noorafshan A, Omidi A, Karbalay-Doust S, Aliabadi E, Dehghani F. Effects of curcumin on the dorsal root ganglion structure and functional recovery after sciatic nerve crush in rat. *Micron.* 2011c;42:449-55.
- Noorafshan A, Abdollahifar MA, Karbalay-Doust S, Asadi-Golshan R, Rashidian-Rashidabadi A. Protective effects of curcumin and sertraline on the behavioral changes in chronic variable stress-induced rats. *Exp Neurobiol.* 2013a;22:96-106.
- Noorafshan A, Rashidiani-Rashidabadi A, Karbalay-Doust S, Poostpasand A, Abdollahifar MA, Asadi-Golshan R. Curcumin can prevent the changes in cerebellar structure and function induced by sodium metabisulfite in rat. *Exp Neurobiol.* 2013b;22:258-67.
- Noorafshan A, Abdollahifar MA, Asadi-Golshan R, Rashidian-Rashidabadi A, Karbalay-Doust S. Curcumin and sertraline prevent the reduction of the number of neurons and glial cells and the volume of rats' medial prefrontal cortex induced by stress. *Acta Neurobiol Exp (Wars).* 2014;74:44-53.
- Noorafshan A, Abdollahifar MA, Karbalay-Doust S, Asadi-Golshan R, Rashidian-Rashidabadi A. Sertraline and curcumin prevent stress-induced morphological changes of dendrites and neurons in the medial prefrontal cortex of rats. *Folia Neuropathol.* 2015a;53:69-79.
- Noorafshan A, Abdollahifar MA, Karbalay-Doust S. Stress changes the spatial arrangement of neurons and glial cells of medial prefrontal cortex and sertraline and curcumin prevent it. *Psychiatry Investig.* 2015b;12:73-80.
- Noorafshan A, Asadi-Golshan R, Abdollahifar MA, Karbalay-Doust S. Protective role of curcumin against sulfite-induced structural changes in rats' medial prefrontal cortex. *Nutr Neurosci.* 2015c;18:248-55.