The effects of alpha-lipoic acid on breast of female albino rats exposed to malathion: Histopathological and immunohistochemical study.

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Abstract:

ABSTRACT The wide use of the organophosphate insecticide malathion is accompanied by the risk of human exposure and may be involved in the etiology of breast cancers, especially in developing countries. Alpha (α)-lipoic acid, a natural molecule, present in our diet has antioxidant and protective effects in cases such as aging, diabetes mellitus, and vascular and neurodegenerative diseases all in which free radicals are involved. However, there is only scarce data regarding the efficacy and biological activity of α-lipoic acid on malathion-induced breast histopathological changes. To investigate whether malathion can induce mammary histopathological changes, to immunohistochemically analyze the modulations in proliferation-apoptosis balance associated with these changes, to assess the associated metabolic parameters, antioxidant stress and hormonal profile changes and to elucidate the possible protective effect of α-lipoic acid on malathion induced alterations in rats. Forty Wistar female rats weighing 150-170g were divided into four groups. Group 1: control group were injected intraperitoneally (ip) with saline solution. Group 2: animals were injected (ip) with malathion twice a day for five days. Group 3: animals were orally given α-lipoic acid, after three hours of treatment with malathion at the same dose given to group 2. Group 4: animals were treated with α-lipoic acid at the same dose given to group 3. Rats were sacrificed on the 90th day, and breast tissues were analyzed for histopathological and immunohistochemical alterations. Blood samples were collected for biochemical tests. α-Lipoic acid exhibited a striking reduction of malathion-induced mammary tumor incidence, and reversed intra-tumor histopathological alterations. Alpha lipoic acid suppressed proliferating cell nuclear antigen (PCNA) and p53 expression, induced apoptosis, upregulated proapoptotic protein Bax. Our results provide the experimental evidence that α-lipoic acid exerts chemopreventive effect in the breast hyperplastic and malignant changes by suppressing abnormal cell proliferation and inducing apoptosis with an oncostatic effects during an early-stage breast cancer. The effects of alpha-lipoic acid on breast of female albino rats exposed to malathion: Histopathological and immunohistochemical study.. Available from: https://www.researchgate.net/publication/274644657_The_effects_of_alpha-lipoic_acid_on_breast_of_female_albino_rats_exposed_to_malathion_Histopathological_and_immunohistochemical_study [accessed May 2, 2015].

Published In:

Pathology - Research and Practice (Impact Factor: 1.56). , March 2015 ,