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Female Reproduction

Effects of Methomyl on the biochemical and reproductive parameters in pregnant rats: The protective role of Pistacia Lenticulus oil.
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INTRODUCTION

Carbamates class is one of the most common used pesticides in some field of applications as insecticides, herbicides and fungicides. Among carbamates, methomyl (MET) is one of carbanate insecticides used in agriculture to control a broad spectrum of insects and arthropods in fruits, cotton, soybeans, vegetables and other field crops, on turf and in livestock facilities. It is classified as restricted use pesticide because it’s highly hazardous to humans and mammals (IPEA, 1998a). However, until now, it is remain used in developing countries and little is known about its effects on female reproductive system and outcomes.

Pistacia lenticulus L. (PL), is a green shrub belonging to the Anacardiaceae family, natively distributed in the Mediterranean countries such as north Africa. It is classified as medicinal plant which is used since the antiquity in traditional medicine for the treatment of various kinds of diseases like eczema, inflammation, hypertension, hypercholesterolemia, and gastric disorders (Djerou, 2014; EMA, 2015).

Hence, in this study, we attempt to explore the effects of methomyl on the biochemical and reproductive parameters and the possible protective role of Pistacia lenticulus oil (PLO) against MT-induced toxicity in pregnant rats.

RESULTS

Pesticides became one of the essential products in agriculture to control pests and increase crop yields. Animal and human exposure to these products has been strongly associated with many health problems (Bhandari and Saraf, 2014; Obenna and Menash, 2001), including carcinogenesis, neurotoxicity, diabetes, endocrine disruption, reproductive effects such as infertility, stillbirth, premature birth, low birth weight, ovarian disorders and changes in sexual behavior (Henderson et al., 1995, Schimert et al., 2003; Anderson et al., 2014).

Our results show a reduction of body weight and daily food intake and a significant increase of cholesterol, glucose, creatinine, urea, ASAT, ALAT and total protein. In addition, MT-induced reproductive toxicity pronounced by a decline in litter size, the mean weight of newborns, sex ratio, viability and progenetive level.

The histological examinations revealed that MET induced tissue damage in the adrenal gland marked by cells disorganization and vacuolization, as well as an obvious degenerative changes in ovaries structure marked by a few number of healthy follicles and many cystic and atretic follicles at different stages of development.

Pistacia lenticulus group exhibit a similar pregnancy outcomes and histological structure in adrenal gland and ovary organs when compared with control, however a modest elevation in progenetive level was marked.

Also the co-administration of Pistacia lenticulus oil along with MET can alleviate and restore partially or completely some toxic effects induced by MET during the treatment period.

DISCUSSION


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