Ain Shams University
Women's College for Arts, Science & Education
Zoology Department

THE USE OF HORDEUM VULGARE AS AN ANTIOXIDANT AGENT IN CYTOGENETICS STUDIES

Thesis

Submitted to Women's College, Ain Shams University
For The Degree of M. Sc. In Zoology (Cytogenetics)

By

Thanaa Mustafa Salem Hassan Bader
Demonstrator in Zoology Department
Women's College for Arts, Science and Education
Ain Shams University
(B. Sc. 2003)

Under Supervision of

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2009

بِسۡمِ ٱللَّهِ ٱلرَّحۡمَٰنِ ٱلرَّحِيمِ

﴿رَبِّ أَوْزِعْنِى أَنْ أَشْكُرَ نِعْمَتَكَ الَّتِى أَنْعَمْتَ

عَلَىَّ وَعَلَى وَالِدَىَّ وَأَنْ أَعْمَلَ صَلِحاً تَرْضـهُ

وَأَدْخِلْنِى بِرَحْمَتِكَ فِى عِبَادِكَ الصّلِحِينَ﴾

صدق الله العظيم

سورة النمل(١٩)

Ain Shams University
Women's College for Arts, Science & Education
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Scientific Degree: M. Sc.

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B. Sc. Graduation year: May, 2003

The Premaster Studies

- **Cytology**
- **Histology**
- **Histopathology**
- **Physiology**
- **Statistics**
- **Scientific English**
- **Parasitology**

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Abstract

The emphasis of the present study was to investigate the possible modulatory anticlastogenic effects of pre treatment and post treatment with barley on somatic cells (bone marrow cells) and germ cells (sperms) of cyclophosphamide (CP) or clomipramine (CL) treated mice. 246 male albino mice weighing 27-32 g, were divided into seven main groups treated as follows: control group, CP (include two doses 5 mg/kg and 40 mg/kg for 1, 3 and 15 days), clomipramine (include two doses 25 mg/kg and 75 mg/kg for 7 days), barley treatment groups with two doses of 30 and 60 gm/day barley for 28 days include two main groups, pre treatment and post treatment groups. Mice were injected with CP and CL intraperitonealy (IP). They received barley by gavages. Animals were sacrificed to assay chromosomal aberrations, sperm shape abnormalities and protein electrophoresis of serum protein of treated animals. Chromosomal aberrations and sperm shape abnormalities were used as mutagenic bio-assay. It was noted that, in all treated with barley, some protein bands that appeared by CP or CL alone were disappeared and

appearance of new bands. The most important result obtained in the present study was the percentage of total aberrations. This percentage was decreased that induced by CP or CL alone, when barley was given before and after CP or CL. The reduction was very highly significant ($P< 0.001$) when compared with the control group. These results suggested that pre and post treatment with barley might increase the intracellular content of barley (β-glucan and phenolic compounds), thus intensifying the protection against damage induced by free radicals, reactive oxygen species (ROS), which may react with protein and DNA producing these aberrations. From these findings it is to be suggested that barley should be advised before and during chemotherapy of malignant tumors.

CONTENTS