

Impact effects of bisphenol A on female rats in some physiological parameters

By

Noor Sabah Ruaa Abalwahid Hadeel Hisham

Supervised by

Dr. Muhsin Sagheer

Introduction

- The increasing incidence of reproductive disorders observed over the past few decades has raised concern about the role of substances known as endocrine disruptors (EDs) that are capable of modulating or disrupting the function of the endocrine system.

Introduction

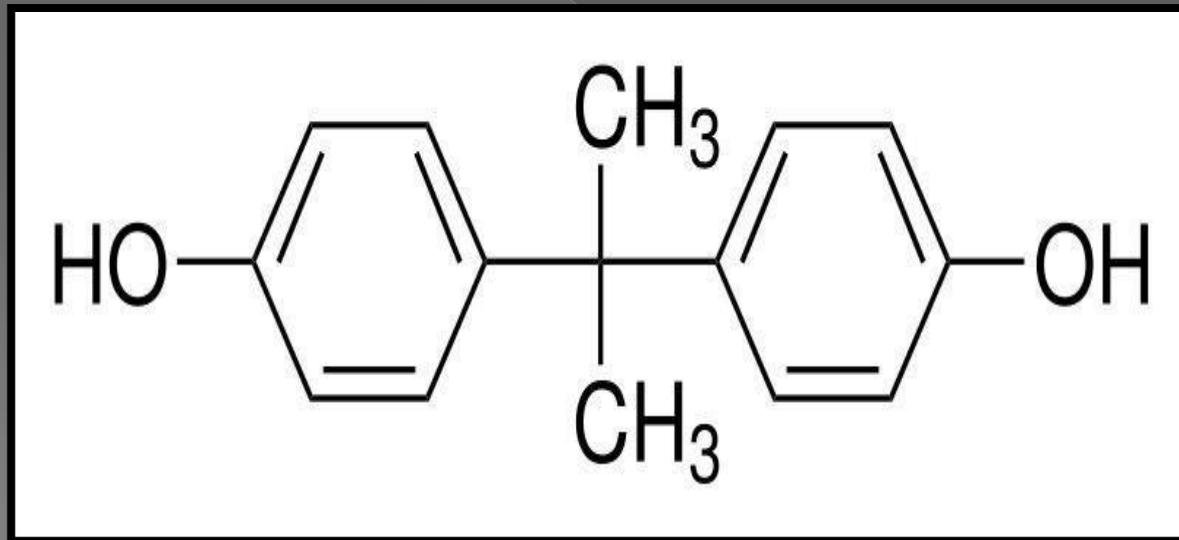
- One such estrogenic ED, is Bisphenol A (BPA), which becomes ubiquitous in the environment within the past 80 years because of its presence in a multitude of products including food and beverage packaging, flame retardants, adhesives, building materials, electronic components, and paper coatings.

Introduction

- In 1930's , it was discovered that BPA has estrogenic properties. BPA was first used in epoxy resins in 1930 Were first discovered by accident. In 1993, it was discovered that BPA leached from autoclaved polycarbonate flasks , leading to increase proliferation of breast cancer cells.

Chemical structure of BSA

- The structure of BPA consists of two unsaturated phenolic rings and resembles diethylstilbestrol.



Production and uses of BPA

- The widespread use of BPA has led it to be one of the most produced chemicals in the world, at 2 million tons a year, with 6-10% growth in demand expected per year.
- BPA used primarily as a monomer in the production of poly carbonate plastic (PC) , and epoxy resins.

Production and uses of BPA

- ◉ It also has uses in polyester , polysulfone and polyacrylate resins , and flame retardants.
- ◉ polycarbonate is widely used in food contact materials such as infant feeding bottles , tableware , microwave ovenware , food containers , water bottles , milk and beverage bottles , processing equipment and water pipes.

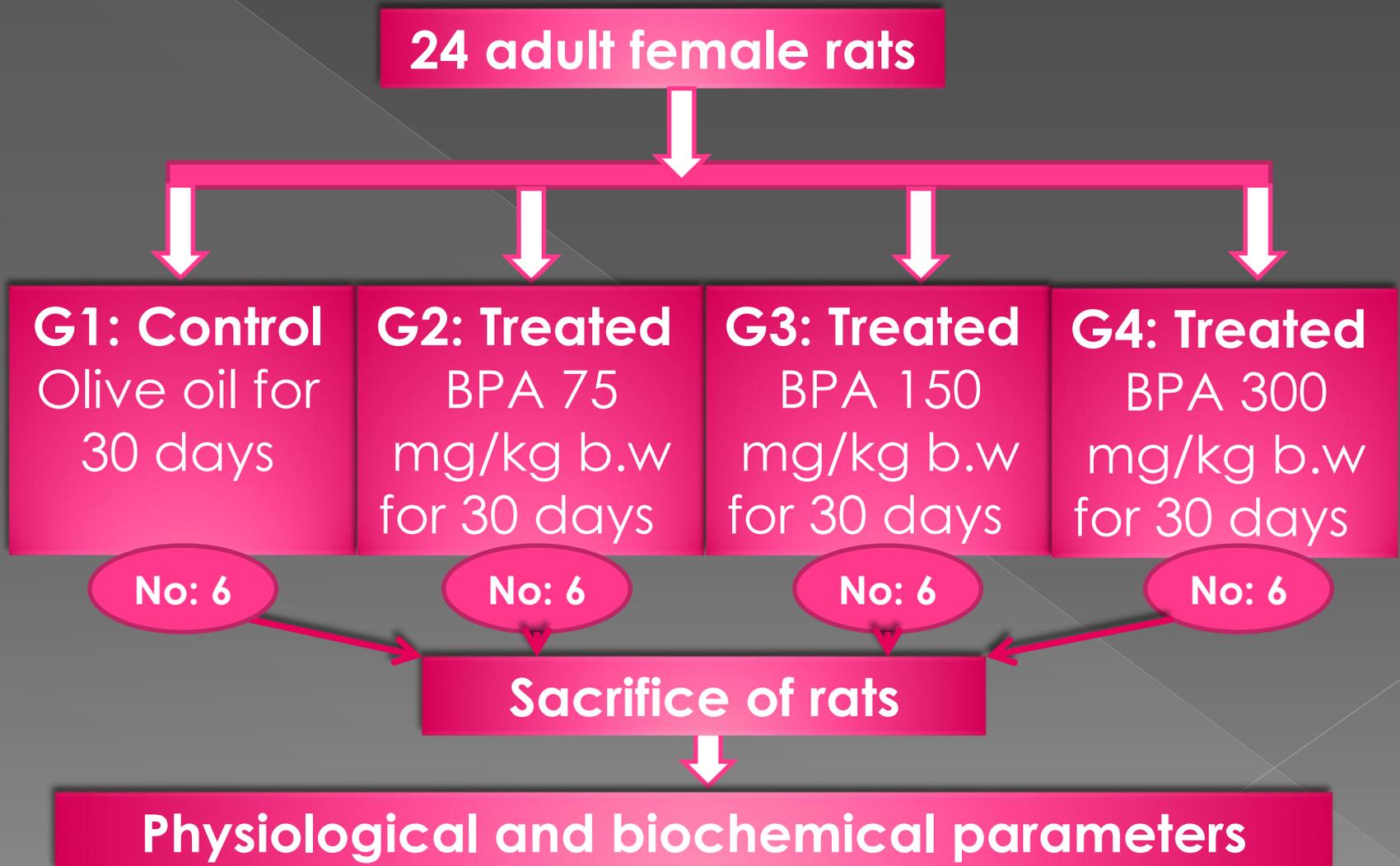
Production and uses of BPA

- ⦿ These uses result in consumer exposure to BPA via the diet.
- ⦿ Environmental exposure to BPA is associated with many disorders in humans including heart failure, kidney diseases and immune system dysfunction, etc.

Aim of the study

- Evaluation of the effects of BPA on different physiological and biochemical parameters.

Experimental Design



Results

Table (1) The effect of exposure to BPA on Some blood parameters in female rats (Means \pm SE) no. 6

Parameters/ groups	RBC $\times 10^6$ cell/mm ³	WBC $\times 10^3$ cell/mm ³	Hb	PTL
G1 Control	6.26 \pm 45 a	9.11 \pm 21 a	14.21 \pm 23 a	425.65 \pm 12 a
G2 75 mg	5.11 \pm 34 b	9.15 \pm 45 a	12.23 \pm 64 b	261.34 \pm 56 b
G3 150 mg	4.95 \pm 35 c	10.47 \pm 35 b	10.34 \pm 61 c	210.23 \pm 54 b
G4 300 mg	4.11 \pm 12 c	11.73 \pm 23 c	9.65 \pm 31 c	156.34 \pm 26 c
LSD	0.54	1.21	1.56	56.23

Different letters represent a significant difference at ($p \leq 0.05$)

Results

Table (2) The effect of exposure to BPA on Some biochemical in female rats (Means \pm SE) no. 6

Parameters/ groups	AST U/ml	ALT U/ml	Total CHL gm/dl	Glucose Gm/dl
G1 control	90.65 c	54.66 bc	170.67 b	95.11 b
G2 75 mg	100.23 c	65.11 b	186.23 b	145.65 b
G3 150 mg	117.56 b	75.35 b	204.43 a	167.75 a
G4 300 mg	140.67 a	89.43 a	210.23 a	168.34 a
LSD	16.34	13.53	25.31	23.45

Different letters represent a significant difference at ($p \leq 0.05$)

Conclusion

Based on the present results the following may be concluded:

- 1-** Exposure to BPA have different effects on blood parameters where it decrease RBC, HB and platelets count in all treated groups while increase WBC in treated group with (150 and 300 mg).
- 2-** Significant increase in liver enzymes (AST and ALT), cholesterol and glucose in groups exposure to 150 and 300 mg of BPA.
- 3-** Exposure to BPA causes oxidation may contribute functional disorder in many organs body.

Thank you