Phthalates and Bisphenol A: Presence in Blood Serum and Follicular Fluid of Italian Women Undergoing Assisted Reproduction Techniques

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Abstract

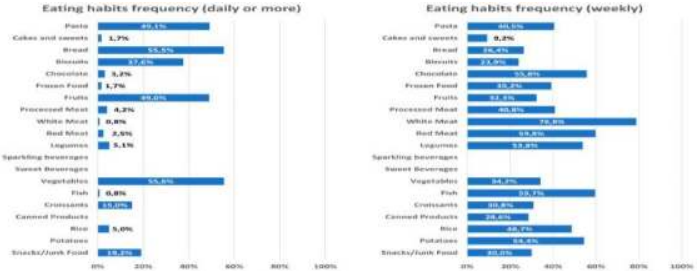
Background: folliculogenesis is a strictly regulated process that may be affected by endocrine disrupting chemicals (EDCs) through sometimes not so clear molecular mechanisms.

Methods: we conducted a multicentric observational study involving six fertility centers across Italy, prospectively recruiting 122 women attending a fertility treatment. Recruited women had age ≤42 years, and normal ovarian reserve. Blood and follicular fluid samples were taken for EDCs measurement using liquid chromatography tandem mass spectrometry and each woman completed an epidemiological questionnaire.

Results: The main EDCs found were monobutyl phthalate (MBP) (median blood: 8.96 ng/mL, follicular fluid 6.43 ng/mL), monoethylhexyl phthalate (MEHP) (median blood: 9.16 ng/mL, follicular fluid 7.68 ng/mL) and bisphenol A (BPA) (median blood: 1.89 ng/mL, follicular fluid 1.86 ng/mL). We found that serum MBP concentration was significantly associated with the considered area ($p < 0.001$, adj. mean: 7.61 ng/mL, 14.40 ng/mL, 13.56 ng/mL; Area 1: Milan-Turin, Area 2: Rome-Naples; Area 3: Catania-Bari, respectively) but negatively with home plastic food packaging ($p = 0.004$). Follicular MBP was associated with irregular cycles ($p = 0.019$). No association was detected between EDCs and eating habits and other clinical and epidemiological features.

Conclusions: This study represents the first Italian biomonitoring of plastic EDCs in follicular fluid, laying the basis for future prospective evaluation on oocyte quality before assisted reproduction techniques (ART).





1 "Gene expression and apoptosis levels in cumulus cells of patients with polymorphisms of FSHR and LHB undergoing in vitro fertilization program.
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2 Rivista Procreare,(Nazionale) vol.1, N°1. 1 gennaio 2001, pag. 38-42.

3 The 2004 Italian Legislation regulating assisted reproduction technology: a multicentre survery on the result of IVF cycles. Hum. Reprod. 7 April 2005

4 Chromosome analysis of spontaneous adortions after in vitro fertilization (IVF) and ir Obstetrics and Gynecology and Reproductive Biology 4297 (2002) 1-5



The doctor has been involved in clinical Embryology for 23 years and is Laboratory Director of the San Luca Medical Center in Bari (Italy). Dealing with assisted fertilization, she evaluates the characteristics of gametes in vivo in the laboratory, defining their quality with the aim of obtaining good quality embryos that allow a good pregnancy rate.

Has always been sensitive to issues related to couple fertility and the importance of proper nutrition and lifestyle. Recently, with increasing pollution, our body becomes saturated with toxins that can cause various diseases and lead to infertility.

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Notes/Comments: