

## 5 Introduction

In the last years, phthalates, a class of chemicals used as plasticizers, have attracted special attention because their high-volume production, ubiquitous environmental presence and possible association with adverse reproductive health outcomes (Kavlock *et al.*, 2002; Lovekamp-Swan and Davis, 2003). Di-(2-ethylhexyl) phthalate (DEHP) is the most common phthalate plasticizer used in the manufacture of a broad range of consumer goods (Kavlock *et al.*, 2002), imparting flexibility and durability to polyvinyl chloride (PVC) based plastics (Moore *et al.*, 2001; Shea, 2003; Rais-Bahrami *et al.*, 2004).

DEHP is a known reproductive toxicant (Li *et al.*, 2000; Moore *et al.*, 2001; Mylchreest *et al.*, 2002; Barlow and Foster, 2003), acting as an antiandrogen in males. However, data on the effects of phthalates on female reproductive health are particularly sparse, being restricted mainly to high dose exposure of adult female rats. Studies concerning DEHP exposure and reproductive effects on females demonstrated that the ovary is a likely target for toxicity in adult animals (Davis *et al.*, 1994, Lovekamp-Swan *et al.*, 2003). Prolonged estrous cycles, reduced serum estradiol levels and absence of ovulation (Davis *et al.*, 1994) constitute some of the adverse effects seen in adult female rats exposed to high DEHP doses. Phthalate exposure has also been associated with reproductive effects in women, including shorter pregnancy duration (Latini *et al.*, 2003) and pathogenesis of endometriosis (Cobellis *et al.*, 2003, Reddy *et al.*, 2006).

Exposure to reproductive toxicants during *in utero* and lactation may result in permanent changes that are not seen in adults exposed at similar levels. Previous studies with DEHP have generally investigated high dose exposures in adults. There are no published data concerning adult female reproductive health after pre- and early postnatal exposure to DEHP. The objective of the present study was to evaluate possible reproductive effects of low and high doses of DEHP on female offspring rats exposed *in utero* and during lactation. In this comprehensive dose response study, female reproductive development was investigated in different life stages up to adulthood.