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Association between phthalates and reproductive biomarkers in infertile male

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Phthalates are used in personal and consumer products, food packaging materials, and polyvinyl chloride plastics and have been measured in the majority of the general population of India. Consistent experimental evidence shows that some phthalates are developmental and reproductive toxicants in animals. This study explored the association between environmental levels of phthalates and altered reproductive hormone levels in the infertile adult male. Blood and urine samples were collected from 150 infertile patients and 75 fertile volunteers recruited through the Department of Urology, Safdarjung Hospital, New Delhi. Selected phthalates & their metabolites were measured in serum and urine samples by GC-MS and UPLC using NIOSH/OSHA detailed protocol. Linear regression models explored the relationship between specific gravity-adjusted urinary phthalate monoester concentrations and serum levels of reproductive hormones, including Estradiol, Testosterone, AP, LD, GGT and hydroxysteroid dehydrogenase. Although we found a significant correlation between several phthalates (DICHP, DMOP, DEHP, BEHIP, DBP, and DDIP) compounds and mean ranks of testosterone and estradiol in the subject, indicating that steroid hormones were associated with phthalates in Indian population. Thus phthalates and their metabolites might be independent risk factors for male infertility.

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