Impact of route of administration on genotoxic oestrogens concentrations using oral vs transdermal oestradiol in girls with Turner syndrome

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© 2018 John Wiley & Sons Ltd Objective: The established link between oestrogen and breast cancer occurs via both oestrogen receptor (ER)-mediated and non ER-mediated mechanisms. The term genotoxic estrogens describes mutagenic metabolites, including oestrogen catechols and quinones, which have been linked to breast carcinogenesis in post-menopausal women. We aimed to assess whether the route of administration of 17\(^{\beta}\) oestradiol (E\(_2\)) affects the accumulation of genotoxic oestrogen metabolites in a model of ovarian failure in young girls with Turner syndrome.

Methods: Stored plasma samples obtained at 0 and 12 months were used from 40 adolescents with Turner syndrome who participated in a 12 months randomized controlled trial of the metabolic impact of E\(_2\) orally (2 mg/d) vs transdermally (100 \(\mu\)g/d); dose escalation allowed matching of unconjugated E\(_2\) levels in the parent study. We measured 12 oestrogen metabolites (total concentrations = conjugated and unconjugated) using a highly sen