

**Photocatalytic (UV-A/TiO₂) and photolytic (UV-A)
degradation of steroid hormones: Ethinyl Estradiol,
Levonorgestrel, and Progesterone**

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Abstract:In the present study, photocatalytic degradation of the steroid hormones: Ethinyl Estradiol, Levonorgestrel, and Progesterone, using immobilized TiO₂ films as a photocatalyst under UV-A light, has been investigated. The photolytic degradation (i.e. photodegradation without catalyst) of the steroid hormones also has been studied.Changes in the steroid hormones concentrations were followed by High Performance Liquid Chromatography (HPLC). The degradation of these steroid hormones followed first-order kinetics. Experiments were investigated to evaluate the effect of the addition of H₂O₂ as well as the initial concentrations of the steroid hormones. Results clearly demonstrate the efficiency of the photocatalytic and photolytic degradation of these steroid hormones in aqueous medium.

Keywords: Ethinyl Estradiol; Levonorgestrel; Progesterone; Photocatalytic degradation; Photolytic degradation; TiO₂.

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