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Accurate quantification of PGE_2 in the polyposis in rat colon (Pirc) model by surrogate analyte-based UPLC-MS/MS

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Highlights

- The colon PGE_2 of normal (wild type) rat and Pirc rat (an *Apc*-mutant rat) were firstly accurately determined by specific and sensitive UPLC-MS/MS.
- PGE_2 was confirmed to promote Pirc rat colon polyps growth.
- An unusual mobile phase (0.1% ammonia hydroxide) was found to greatly improve the chromatographic separation of prostaglandins.

Abstract

An accurate and reliable UPLC-MS/MS method is reported for quantification of endogenous Prostaglandin E2 (PGE_2) in rat colon mucosa and polyps. This method adopted the "surrogate analyte plus authentic bio-matrix" approach, using two different stable isotopic labeled analogs — PGE_2-d9 as the surrogate analyte and PGE_2-d4 as the internal standard. Quantitative standard curve was constructed with the surrogate analyte in colon mucosa homogenate; and the method was also successfully validated with the authentic bio-matrix. Concentrations of endogenous PGE_2 in both normal and