

Identification of flurbiprofen and its photoproducts in methanol by gas chromatography-mass spectrometry

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Abstract

A sample of 10 mM flurbiprofen in methanol (or ethanol) was photoirradiated with sixteen 8 W low-pressure quartz mercury lamps irradiated at 306 nm in a Panchum PR-2000 photochemical reactor. In total, four major photoproducts derived from each sample were observed from the HPLC chromatogram. The photoproducts were separated and their structures elucidated by various spectroscopic methods. Alternatively, using GC-MS, 11 major photoproducts were observed. A reaction scheme of flurbiprofen in methanol is proposed: the photochemical reaction routes occur mainly via esterification and decarboxylation, followed by oxidation with singlet oxygen to produce a ketone, alcohols and other derivatives.