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Study of photodegradation of ketoprofen

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Study of Photodegradation of Ketoprofen

A MS joint research between IPT-Brazil and FU-Berlin

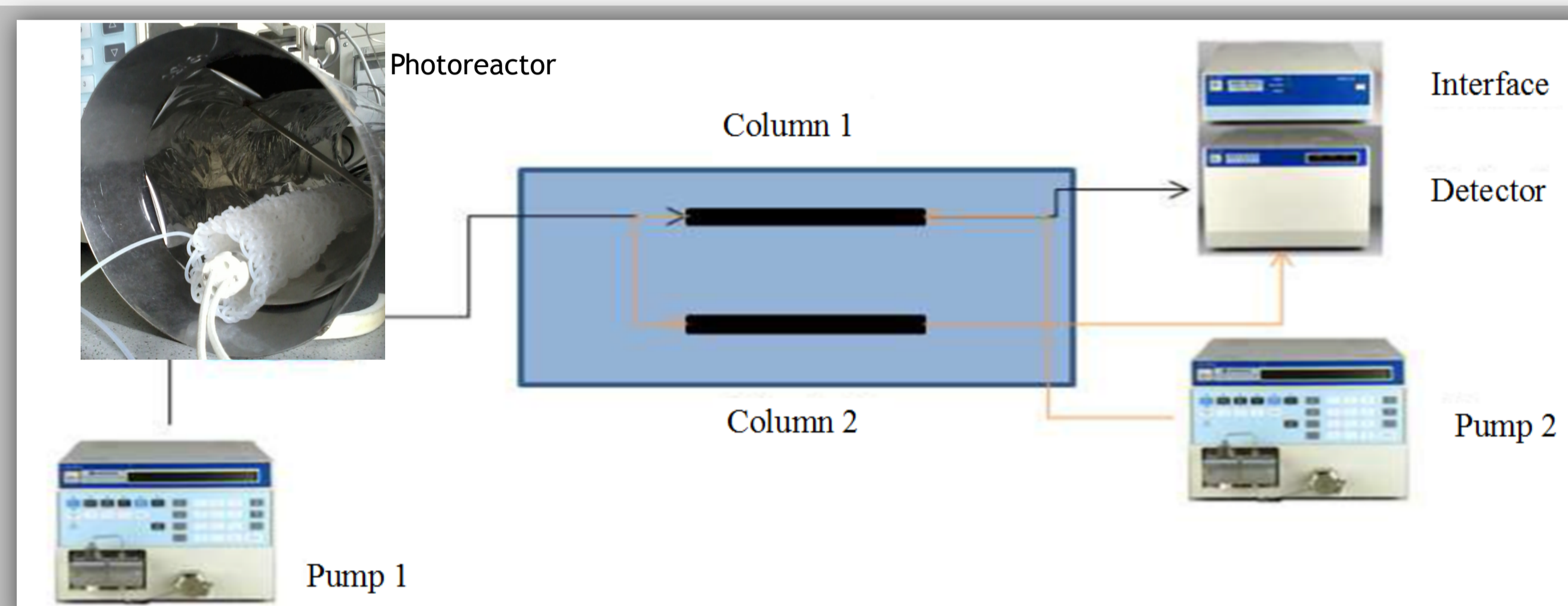
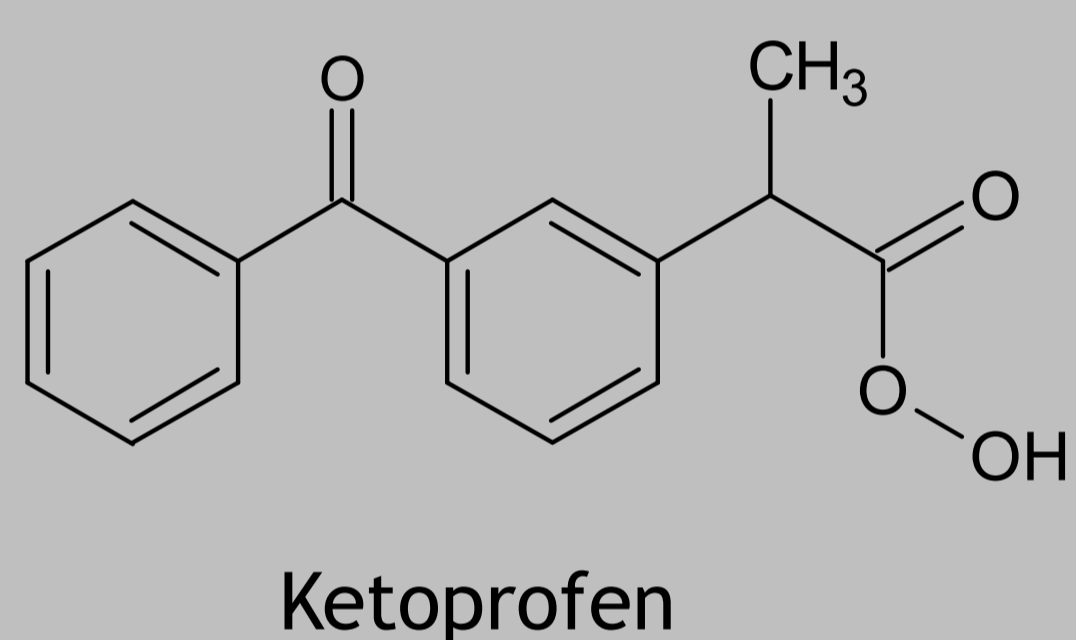
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Introduction:

The aim of this work is to evaluate the photostability of drug substances by using a modified HPLC, which consists of a tailored online photoreactor with back-flush and two column system. By this method, it is possible to obtain a straightforward answer on the degradation via photolysis of different substances in-vitro and to predict the photostability in early stage of drugs development. This may also help to reduce animal experiments in the future. The most important consequence of photodegradation is the loss of potency of the product, but it can also generate unknown toxic products and free radicals that are known for its adverse health effects.



Method:

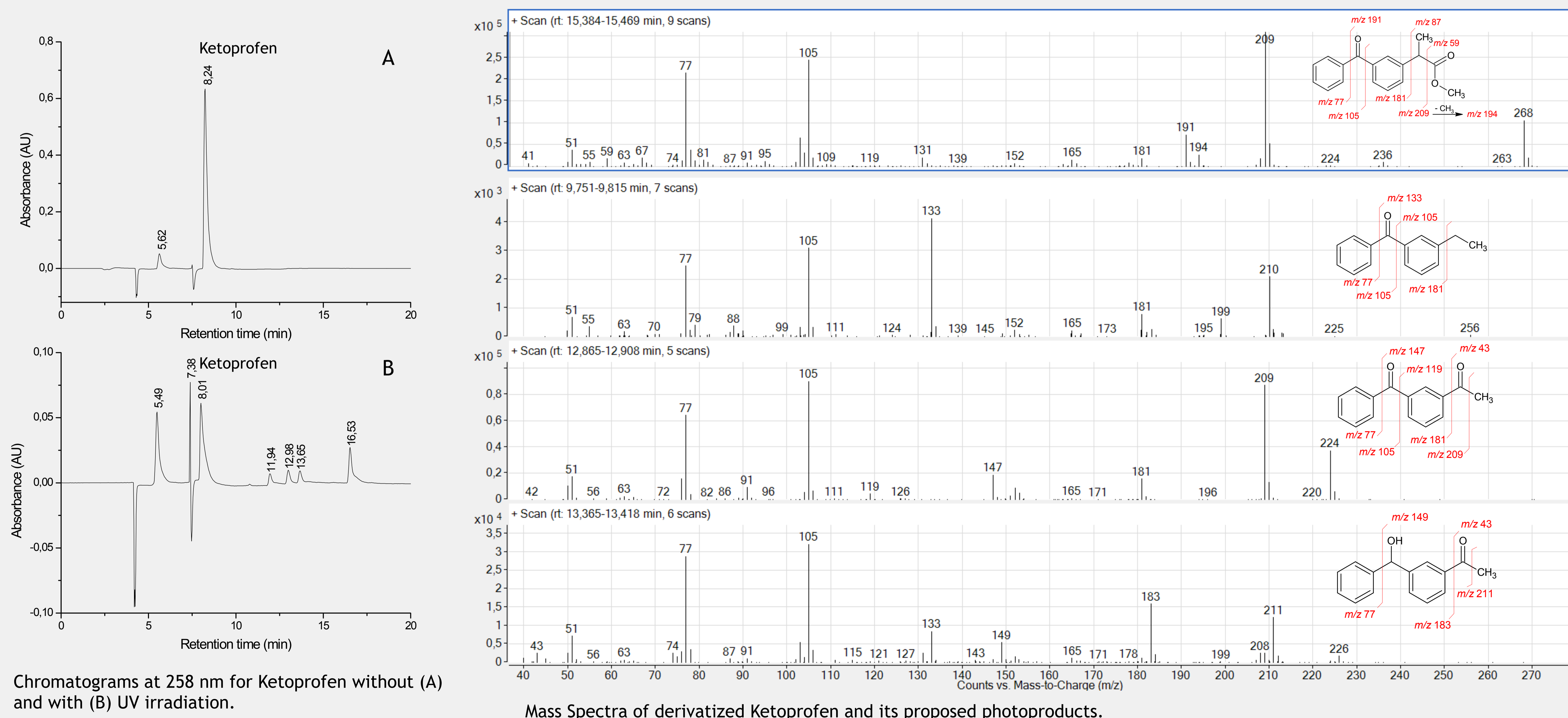


Two columns system for on-line photostability experiments.

GC-MS →

Results and Discussion:

Irradiation of ketoprofen with UVA resulted in decreasing amounts of the target compound. First order kinetics was found as best model.¹ Several photoproducts were detected after irradiation in aqueous solution (pH 7.0). The photoproducts were determined by GC-EI-MS which allowed better ionization when compared to ESI. These data showed the potential for the use of the new device for fast and easy photostability studies.



Chromatograms at 258 nm for Ketoprofen without (A) and with (B) UV irradiation.

Mass Spectra of derivatized Ketoprofen and its proposed photoproducts.

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References:

-¹ Schulze, Thomas. Entwicklung einer In-Vitro-Methode zur Beurteilung des photosensibilisierenden Potentials von Arzneistoffen. Diss. Freie Universität Berlin, 2013.