

NEW PHOTOTRIGGERS BASED ON COUMARINS WITH EXTENDED π -SYSTEMS

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The 2*H*-1-benzopyran-2-one, commonly designated as coumarin, is a well-known oxygen heterocycle with several applications in various areas, including as food additive, in the preparation of insecticides and cosmetics, and exhibiting a broad range of therapeutic activities, such as anticancer, antimicrobial, analgesic, anti-HIV, anticoagulant and antioxidant.¹ In addition, coumarin derivatives have also been used as photocleavable protecting groups (PPGs), with particular importance in biological applications, due to their good molar extinction coefficients at high wavelengths. Also, they reveal a great potential in two-photon uncaging as the release of the target entity can occur under irradiation at wavelengths that are harmless to cells.²

Considering our research interest in the field of PPGs,³ namely for the delivery of biologically relevant molecules, the present work describes the synthesis of new coumarin derivatives possessing an extended π -system, in order to bathochromically shift the wavelength of maximum absorption, and consequently of photolysis (Fig. 1). These compounds were tested as phototriggers of two neurotransmitter amino acids, glycine and β -alanine, at 254, 300, 350 and 419 nm, in a Rayonet RPR-100 photochemical reactor, and the release of the active compound was monitored by HPLC-UV detection, with collection of kinetic data.

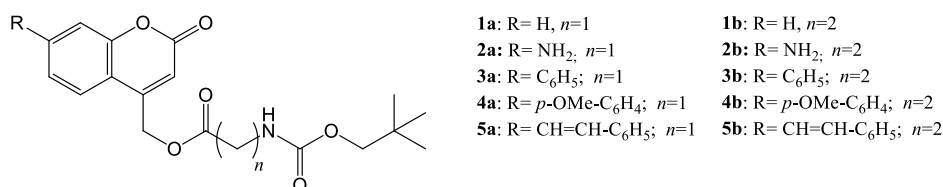


Figure 1: Coumarin ester cages of glycine and β -alanine.

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