Photolytic release at different wavelengths of tetrapeptide AAPV from a pyrenylmethyl conjugate

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The sequence Ala-Ala-Pro-Val is an important tetrapeptide inhibitor of the enzyme human neutrophil elastase (HNE), which is present in high levels in a variety of inflammatory disorders, such as psoriasis, and studies have suggested the use of this peptide as a therapeutic agent for transdermal delivery to reach the target more easily [1]. Prodrugs have been used in transdermal delivery studies as they can enhance skin penetration ability to reach of the target site, being then cleaved to restore the activity. Enzymatic or photolytic processes can trigger the release of the active agent. Pyrene is widely used as a fluorescent label and has also been reported as a photolabile moiety [2].

Considering these facts and the interest of our research group in photosensitive molecules [3], the present work describes the photolysis of ester conjugate NH_2-Ala-Ala-Pro-Val-Pym, with Pym being the pyrenylmethylene goup (Fig. 1), at different wavelengths of irradiation in different solvents and simulated physiological environment. The photolysis of the ester conjugate and the release of the free tetrapeptide was monitored by HPLC with UV detection, with collection of kinetic data.

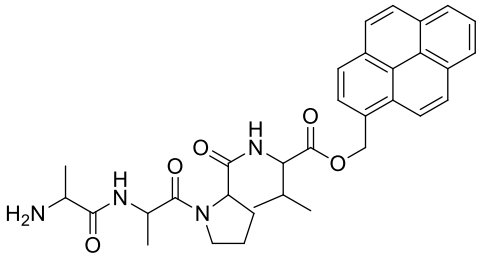

Figure 1 – Structure of AAPV conjugate (NH_2-Ala-Ala-Pro-Val-Pym).

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