6-Methoxy Quinoline containing Photoreactive Peptides: Synthesis and Potential Application in Medicinal Diagnostic

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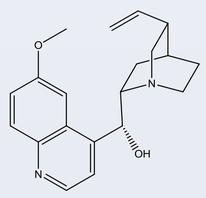
INTRODUCTION

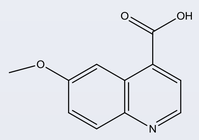
Photoreactive peptides are generated by their functionalization with photo-active moieties and are used for observing bio-molecular interactions. Using photo-conjugated methods that includes chemical or enzymatic degradation processes it can be identified the contact part of the molecule.

For the generation of the photoreactive peptides with bioactivity witch can be used in medicinal diagnostic or as transporters for already known bioactive compounds (antitumor, bacteriostatic), we synthesized photo-active derivatives from natural products (from Quinine it was synthesized 6-Methoxy Quinolinic Acid) or we used the chiral natural product itself Quinine.

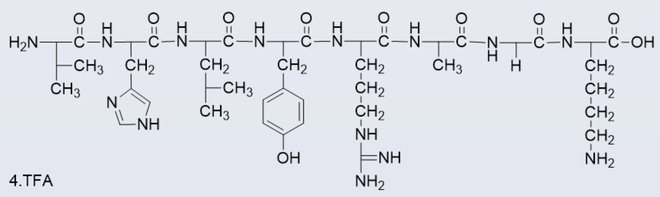
CHINCHONA CALISAYA



QUININE



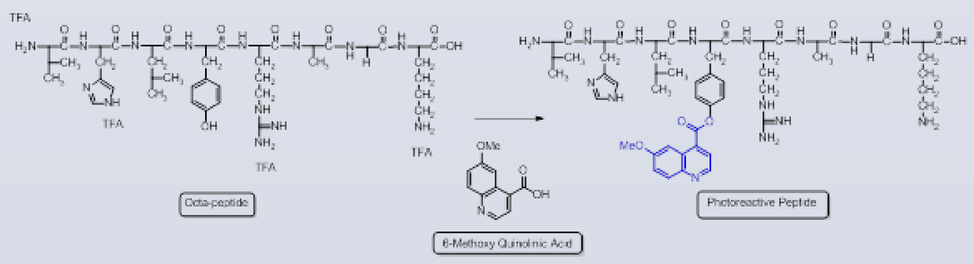
6-METHOXYQUINOLINE-4-CARBOXYLIC ACID



OBJECTIVES

The coupling of the photo-active moieties was made by modifying the amino function of H-Val-His-Leu-Tyr-Arg-Asn-Gly-Lys-OH peptide in α position or the free hydroxyl groups.

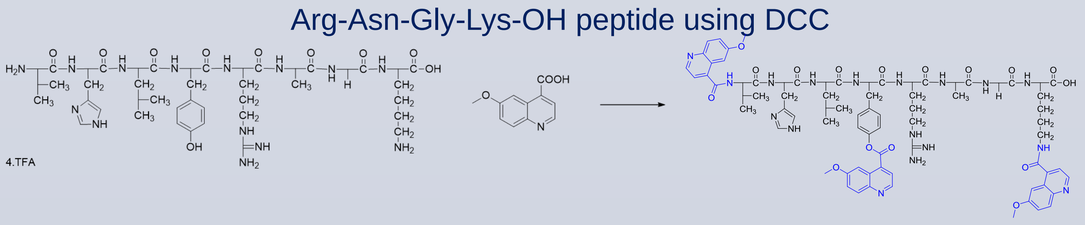
Coupling of just one unit of 6-Methoxyquinoline-4-Carboxylic acid to H-Val-His-Leu-Tyr-Arg-Asn-Gly-Lys-OH peptide using 2-Cl-1-Methyl Pyridinium Iodide



UV irradiation

(366 nm) (254 nm)

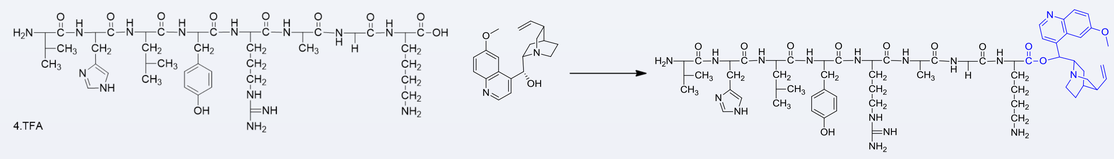
Coupling of three unit of 6-Methoxyquinoline-4-Carboxylic acid to H-Val-His-Leu-Tyr-Arg-Asn-Gly-Lys-OH peptide using DCC



UV irradiation

(366 nm) (254 nm)

Coupling of the natural product Quinine to H-Val-His-Leu-Tyr-Arg-Asn-Gly-Lys-OH peptide using DCC

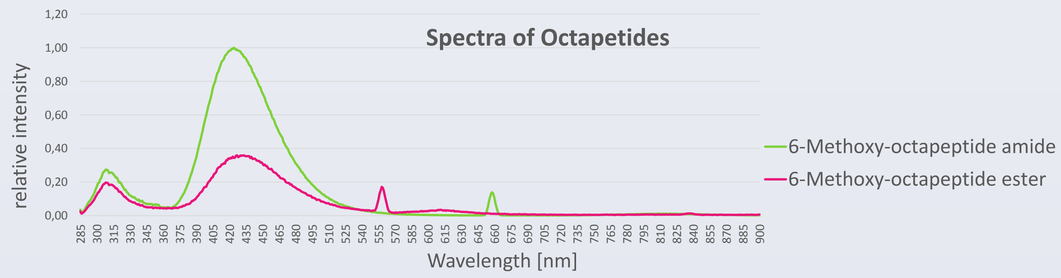


UV irradiation

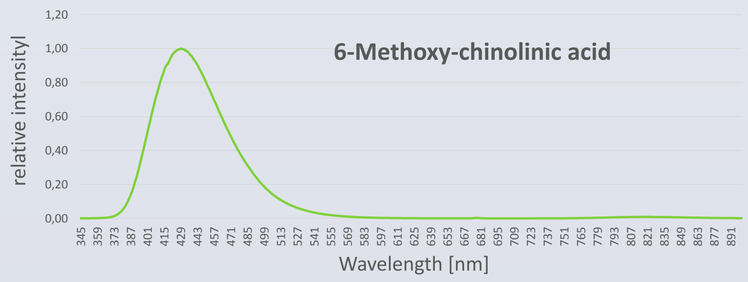
(366 nm) (254 nm)

Fluorescence-emission spectroscopy

The mesurments of the octapeptides were recorded from 285nm to 900nm (time: 1.0 sec; $c_{peptides}$: 0.25mg/ml).



The 6-Methoxy-octapeptides shows an emission at 425nm. This emission is based on the substituent: 6-MeO-chinolinic acid (emission at 430nm). Interestingly is the absolut emission of these compounds correlating to their number of 6-Methoxy-chinolin rests.



CONCLUSIONS

Novel photoreactive peptides were synthsised by coupling H-Val-His-Leu-Tyr-Arg-Asn-Gly-Lys-OH with chiral natural product Quinine and 6-Methoxy Quinolinic Acid derivate from Quinine using different activating agents for the acidic function. The use of 2-Cl-1-Methyl Pyridinium Iodide is selective for the generation of the esters. The DCC coupling is not selective and the activated acid is coupled both to the OH and NH2 affording the corresponding esters and amides.

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