

Photoisomerization of 2-(3-nitro-2-pyridylmethyl)benzazoles at flash photolysis

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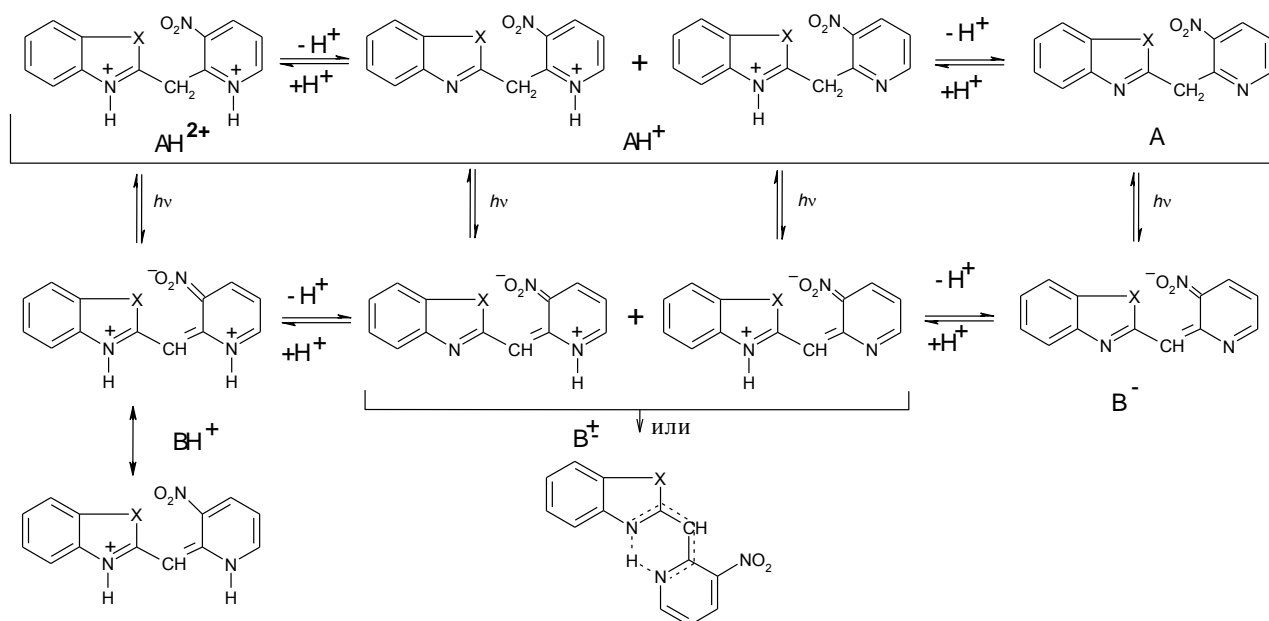
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The effect of light on the *o*-nitroalkylaryl basic heterocyclic derivatives leads to the reversible transfer of a proton from the methylene (methine) bridge, flowing in two directions. When proton transfer to a nitro group of nitroaromatic fragment, formed nitronic acid and/or its anion. Proton transfer heterocyclic moiety leads to the formation of azamerocyanin dye. The present study examined the photochromic properties of mono-, dinitrobenzyl derivatives of benzazoles and compounds containing a nitro group in the heterocyclic fragment - 2-(3'-nitro-2'-pyridylmethyl)-benzazoles. For the latter, with flash photoexcitation recorded at varying pH three photoinduced forms instead of two, as in the case of mono- and dinitrobenzylbenzazoles.



This detectable photoinduced forms are: corresponding anion (B⁻) at pH > 10, azamerocyanine (B[±]) at pH ≈ 4 and monometincyanine (BH⁺) at pH ≈ 1. Azamerocyanine (B[±]) for low basicity heterocycles (benzothiazole and benzoxazole) has a neutral chelate structure (Ch), when the hydrogen atom is linked simultaneously to two nitrogen atoms: one in the pyridine ring, and the second, in the a azole ring. In a series of benzimidazole at pH 1-5 speed discoloration of photo induced forms reduced in sequence nitrobenzyl > nitropyridylmethyl > dinitrobenzyl. Thus, the introduction of the basicity center in the nitrobenzyl chromophore fragment leads to additional photoisomer, to the possible formation of a chelate structure and a long lifetime of the photo forms.

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