

亚油酸与核黄素或FAD激发态之间电荷转移的直接证据

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 根据荧光显微镜方法,我们首次发现核黄素(维生素B2)主要分布在细胞核的膜上和核的内部,故核黄素光敏化与辐射化的靶位置主要集中在细胞核内;当核黄素的浓度较大时,细胞膜上也有药物的分布,即在高浓度时,细胞膜也是光敏化与辐射敏化的作用位点一。应用308nm激光光解时间分辨吸收方法,以亚油酸作为脂质的模型化合物,研究了亚油酸与核黄素和黄素腺嘌呤二核苷酸(FAD)的激发三重态之间的电荷转移过程,首次给出了电荷转移的直接证据。

关键词 [亚油酸](#) [核黄素](#) [激发态](#) [电荷转移](#) [核苷酸](#)

分类号 [0644](#)

Direct evidence for electron transfer from linoleic acid to triplet states of riboflavin and FAD: A laser photolysis study

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Inst Nucl Res., CAS.Shanghai(201800)

Abstract Subcellular localization of riboflavin (RF, Vitamin B2) in human normal liver L02 cells has been studied by means of fluorescence microscopy. The observed distribution of riboflavin inside the nucleus indicates for the first time that the photo-and radio- sensitized target is predominant inside the cells, While at higher concentrations, riboflavin can also be found in the cellular membrane, which demonstrates that cellular membrane is also a target site for riboflavin photo-and radio-sensitization. Here in this work, linoleic acid was used as a lipid model system in order to study the damaging potential of photoexcited flavin. By using time-resolved 308 nm laser flash photolysis with transient absorbance detection, the formation process of radical anion of riboflavin ($RF^{\cdot-}$ or $RFH^{\cdot-}$) or flavin adenine dinucleotide ($FAD^{\cdot-}$ or $FADH^{\cdot-}$) was found to be synchronous with the decay of triplet states of riboflavin (3^1RF^*) or flavin adenine dinucleotide (3^1FAD^*). Moreover, the decay of 3^1RF^* or 3^1FAD^* was pseudo-first-order in the concentration of linoleic acid. These observations provide for the first time direct evidence of electron transfer from linoleic acid to the triplet states of riboflavin and flavin adenine dinucleotide.

Key words [LINOLEIC ACID](#) [HEPATOLAVIN \(=VITAMIN B2\)](#) [EXCITED STATE](#) [CHARGE TRANSFER NUCLEOTIDES](#)

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