Séminaire

Département des sciences de l'imagerie médicale et des radiations

Effect of nitric oxide on dna damage as evidence by the analysis of hydroperoxides and stable products using LC-MS/MS

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Nitric oxide (•NO) is a crucial signaling molecule that interacts with reactive oxygen species (ROS) and can influence radiation-induced DNA damage. This study investigates the role of •NO in-modulating thymine-derived peroxyl radicals using thymidine as a model system and isolated DNA. Samples were exposed to gamma-irradiation in the presence or absence of DEA NONOates (•NO donor) and superoxide dismutase (SOD). The samples were analyzed using liquid chromatography-tandem mass spectrometry (LC-MS/MS) to detect oxidative DNA lesions. Results showed that •NO significantly decreased the formation of hydroperoxide products (5hpm-dU) while increasing alcohol derivatives (5hm-dU), indicating conversion of peroxyl radicals into less reactive species. The presence of SOD reduced hydroperoxide formation and enhanced the effect of •NO, suggesting competition between •NO and superoxide radicals. Similar trends were observed in DNA. Overall, •NO protects DNA by converting harmful radicals into stable forms, reducing further damage.