Far infrared irradiation induces intracellular generation of nitric oxide in breast cancer cells

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摘要

Abstract

Far infrared (FIR) radiation has been used in many health-promoting applications, but the cellular mechanisms have not been elucidated. We investigated the influence of non-thermal-enhanced FIR for generating nitric oxide (NO) in breast cancer cells. We used MCF-7 breast cancer cells treated with FR irradiation or left untreated, and measured the inducible NO concentrations using the DAF-FM diacetate (4-amino-5-methylamino-2',7'-difluorofluorescein) technique. Mean fluorescence intensities of DAY-FM assays from different breast cancer cells showed progressive and cumulative increases in NO with FIR irradiation. Significant inductions of NO synthesis in breast cancer cells were observed both during and after FIR irradiation. Including data from a literature review, we discuss possible therapeutic roles of FR for breast cancers through the induction of NO generation.