

Contribution of radiation-induced, nitric oxide-mediated bystander effect to radiation-induced adaptive response.

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There has been a recent upsurge of interest in radiation-induced adaptive response and bystander effect, which are specific modes in stress response to low-dose/low-dose rate radiation. Recently, we found that the accumulation of inducible nitric oxide (NO) synthase (iNOS) in *wtp53* cells was induced by chronic irradiation with gamma rays followed by acute irradiation with X-rays, but not by each one, resulting in an increase in nitrite concentrations of medium. It is suggested that the accumulation of iNOS may be due to the depression of acute irradiation-induced p53 functions by pre-chronic irradiation. In addition, we found that the radiosensitivity of *wtp53* cells against acute irradiation with X-rays was reduced after chronic irradiation with gamma rays. This reduction of radiosensitivity of *wtp53* cells was nearly completely suppressed by the addition of NO scavenger, carboxy-PTIO to the medium. This reduction of radiosensitivity of *wtp53* cells is just radiation-induced adaptive response, suggesting that NO-mediated bystander effect may considerably contribute to adaptive response induced by radiation.