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Tomato juice consumption could contribute to lower the level of radiation damage in normal tissue cells

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Statement of the Problem: Cancer patients who receive radiotherapy often suffer from the adverse events. Therefore, reduction of radiation damage in normal tissues, included in treatment volume, has been crucial. We have tried to seek efficient but not difficult way to resolve the issue and recently found out that intake of tomato juice, containing various kinds of anti-oxidants or radical scavengers, might be one of the most promising candidates. In this presentation, we report the basic research work showing that tomato juice consumption could contribute to lower the level of radiation damage in human lymphocytes as normal tissue cells. Methodology & Theoretical Orientation: Healthy volunteers were asked to drink tomato juice continuously for 3 weeks and then refrain from drinking it for 3 weeks. Peripheral blood samples were collected before and after the intake period and after the washout period. The concentration of carotenoids in plasma was measured at the 3 time points. Also the samples were exposed to X-rays, and the level of oxidative stress and the cytogenetic damages were estimated. Findings: The concentration of carotenoids increased after intake period. Conclusion & Significance: It was suggested that continuous tomato juice consumption could suppress the level of radiation-induced radiation damage in normal tissue cells. Based on the results, recently we have started a clinical trial focusing on the tissue recovery effects of continuous tomato juice consumption for relieving the symptoms and signs and shortening the duration of acute and subacute adverse events in breast cancer patients receiving postoperative radiotherapy after breast conserving surgery.

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