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# A long-term follow-up of early breast cancer patients treated with photobiomodulation during conventional fractionation radiotherapy in the prevention of acute radiation dermatitis

Jolien Robijns<sup>1</sup>, Joy Lodewijckx<sup>1</sup>, Marithé Claes<sup>1</sup>, Melissa Lenaerts<sup>1</sup>, Leen Van Bever<sup>2</sup>, Stefan Claes<sup>2</sup>, Luc Pannekoeke<sup>2</sup>, Katleen Verboven<sup>2</sup>, Leen Noé<sup>2</sup>, Annelies Maes<sup>2,3</sup>, Paul Bulens<sup>2</sup>, Jeroen Mebis<sup>1,4</sup>

Affiliations

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## Abstract

**Objectives:** The evidence demonstrating the efficacy of photobiomodulation (PBM) therapy for preventing and managing acute radiation dermatitis (ARD) is growing steadily. The question that arises from many clinicians is, if PBM is safe for oncologic patients. This study aimed to evaluate the disease-free survival (DFS), cancer-free survival (CFS), and overall survival (OS) of breast cancer patients treated with PBM for ARD.

**Methods:** Clinical data of 120 breast cancer patients treated with prophylactic PBM (n = 60, 2x/week, 808-905 nm, 4 J/cm<sup>2</sup>) or placebo (n = 60) during conventional fractionation (CF) radiotherapy (RT) between April 2015 and June 2017 were retrospectively analyzed (TRANSDERMIS trial). During follow-up (April 2015 to May 2022), patients underwent a complete clinical evaluation every 6 months and blood analysis and mammography yearly in the first 5 years after the end of RT. The DFS, CFS, and OS were estimated.

**Results:** At a median follow-up time of 66 months (range 4-81), there was no significant difference in DFS (73.7% vs. 98.3%, resp., p = 0.54), CFS (68.4% vs. 77.8%, resp., p = 0.79), and OS (87.9% vs. 98.3%, resp., p = 0.30) between the placebo and PBM group.

**Conclusions:** This paper is the first to describe the results of a long-term follow-up in early-stage breast cancer patients who underwent PBM for ARD. Results suggest that using PBM in breast cancer patients undergoing CF RT does not influence the locoregional recurrence, the development of new primary tumors, or OS.

**Keywords:** acute radiodermatitis; cancer-free survival; disease-free survival; overall survival; photobiomodulation; radiotherapy.

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