

Effects of T-Consciousness Fields on the Thermoluminescence Phenomenon in Populations of TLD Dosimeters with Different Structures

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Abstract

In two previous studies, we investigated the effect of T-Consciousness Fields (TCFs) on the response of GR-200 dosimeters, both on an individual basis (before and after exposure to T-Consciousness fields) and in populations of dosimeter samples (at various time intervals from one year before exposure to 21 days after exposure). These studies revealed a general decrease in the thermoluminescence response after exposure, which persisted as memory for at least 21 days after. In this study, in order to better understand the effectiveness of TCFs and their influence on the initial population, we examined the evidence by changing the samples of GR-200 dosimeters from older (less used) ones from the two previous studies to newer ones. The results suggest that the initial population difference under TCFs treatments does not significantly affect the overall response trend of the samples and is ultimately attributed to structural differences in the samples.

Keywords: TL dosimeter, Thermoluminescence, GR-200, Dosimetry, Structure, T-Consciousness Fields

Introduction

Thermoluminescence (TL) materials have a wide range of applications in various fields, such as personal dosimetry, environmental dosimetry, medical research, and more [1]. These dosimeters function based on a special synthetic structure that takes shape when rare earth elements are introduced into various substrate materials [2, 3]. These materials can be exposed to various types of radiation, such as gamma rays, X-rays, electrons, neutrons, etc., and with very high accuracy, the cumulative dose of radiation can be recorded and retrieved [4]. The sensitivity of TL dosimeter chips to beta radiation in the presence of T-Consciousness Fields (TCFs) has been previously confirmed. In this study, we aimed to investigate the effects of these fields with changes in the initial population of these chips. For this purpose, in this study, we selected nine GR-200 chips that previously had less use in dosimetry (called non-functional in this study)

with elemental correction coefficients (ECC) close to 1. In fact, the purpose of this study is to investigate the effect of TCFs on the diversity of the primary population and to assess changes in the system response.

Method: The research was conducted according to Section 2.2 in the general consideration.

Results and Discussion

The recorded charge values before and after exposure to TCFs are presented in Figure 1 and Table 1. As seen in Table 1 and Figure 1, while confirming the effectiveness of TCFs on populations over different times, with changes from week three, it appears that the significant differences observed in the initial dosimeter samples exposed to the same TCFs ultimately lead to a similar decreasing trend response in this study.

Table 1. Recorded charge values from samples after exposure to beta particles two times before exposure to T-Consciousness fields and two times after that up to 21 days.

Time scales	one year before day 1	Day 1	one minute after treatment in day 1	three weeks after treatment
ID	Q_0	Q_i	Q_{f1}	Q_{f2}
A3	2.197	2.151	2.086	1.928
A6	2.055	2.151	1.653	1.843
A7	2.249	2.560	2.361	2.191
A9	2.249	2.139	2.059	1.584
D2	2.066	2.127	2.042	1.833
E4	2.156	2.038	2.098	1.898
G6	2.114	2.481	2.411	2.229
H8	2.044	2.059	2.075	1.920
I3	2.023	1.989	1.966	1.713
Ave±SD	2.128±0.088	2.188±0.197	2.083±0.220	1.904±0.205

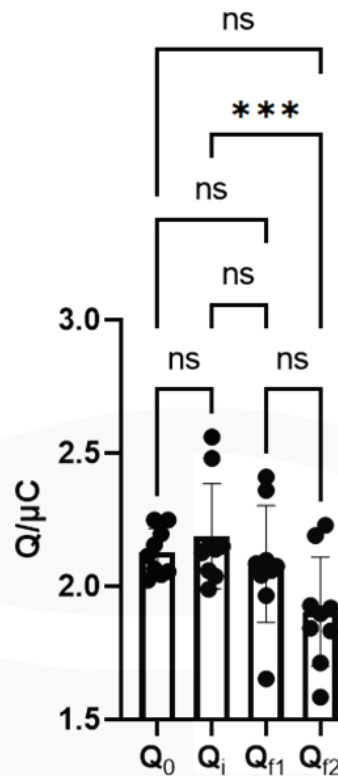


Figure 1. Recorded charge values from samples two times before exposure to T-Consciousness fields (Q_0 and Q_i) and two times after that up to 21 days (Q_{f1} and Q_{f2}). Symbols: ns: Not significant, ***: p-value<0.001.

In fact, what is referred to as the specific response of TLD dosimeters to TCFs is the reduction in charge, which is observable in various individuals and whole populations over different periods of time in this study. This data, in line with the previous study's findings,

demonstrates the 'memory' of the effectiveness of TCFs, which leads to behavioral change of population samples toward the goals and missions declared by TCFs, until the end of the study period.

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