

Title of Abstract:

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**CYTOPROLIFERATIVE EFFECT OF PULSED RADIO FREQUENCY ENERGY
(PROVANT®) ON HUMAN SKIN CELLS**

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ABSTRACT

PURPOSE:

To determine whether Pulsed Radio Frequency Energy (PRFE)* accelerates growth of skin cells *in vitro*, and if so, the optimum dose, time, signal duration and signal repetition rate related to the cell growth response.

METHODOLOGY:

SA-1 human primary fibroblasts were treated with PRFE using varying levels of field strength, treatment time, signal duration and signal repetition rate. Control cells received sham treatment. Following incubation, cells were fixed, washed, stained and counted.

RESULTS:

With varying **dosage levels** (0 to 178 mw/cm²), PRFE significantly increased fibroblast proliferation (p<0.001) relative to controls by 98.5±18% (ED₅₀ 9.3 mw/cm²; ED₁₀₀ 32 mw/cm²).

When **duration of treatment** was varied (0 to 60 min) at 32 mw/cm², proliferation varied significantly as a function of treatment time (p<0.0005) with half-maximal enhancement after 10 min and maximal enhancement following 15-60 minutes.

When tested at **signal durations** of 0 to 100 μ sec, proliferation varied significantly ($p < 0.0005$). Maximal cell proliferation occurred at signal durations between 32-50 μ sec.

Fibroblast proliferation varied significantly with **signal repetition rate** ($p < 0.0005$). When treated with 0 to 2000 peaks/sec, maximal cell proliferation occurred at 1000 signals/sec.

CONCLUSION:

PRFE increases cell proliferation by almost 100% in human skin cells. The acceleration of cell proliferation varies with field strength, therapy duration, signal duration and signal repetition rate, allowing the therapeutic parameters to be optimized for clinical trials. Large therapeutic windows are noted.

* PROVANT® Wound Therapy System (Regenesis Biomedical, Inc., Scottsdale AZ)