

# Evaluation Study on the Effect of Three Electric Currents on the *Candida Albicans* Fungus Cells

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## Abstract

The aim of the study was to evaluate the effect of three types of electric current generated by devices, used in natural medicine, on the *Candida albicans* (fungus cells). The study revealed that the count and growth of the fungus cells depends on the type of electric current used.

Conclusions: A positive off-set type current reduces the count and inhibits the growth of *Candida albicans* cells. A square wave symmetric alternating current with no constant component added has no effect on the count and growth of the fungus cells. A direct current (D.C.) significantly increases *Candida albicans* cell count and growth.

**Keywords:** medikzap, zapper, *Candida albicans*, electric current, positive off-set

## Introduction

The beginning of the 20th Century marked the appearance of a theory that, apart from the cardiovascular and lymphatic systems within the human organism, there is also a system of circulating electric current. The pioneers of this theory were Dr. Royal Raymond Rife (1888–1971) and George Lakhovsky (1869–1942), specialists in bioelectricity and bioenergy who claimed that every living organism (human, vegetal or bacterial *etc.*) has its own electric vibration characteristic for the species. If this vibration is suppressed, disease or even death may follow. Nikola Tesla (1856–1943), an outstanding engineer and inventor, claimed that electricity affects our organisms. He suggested that applying certain electric frequencies, they can be used in medicine, anesthesia, sterilization of wounds, surgical procedures and stimulation of processes ongoing in the skin. All shared the opinion that electric energy of the organism is responsible for the way that the organism functions [1, 2]. Some contemporary biologists and physicians like Dr. Hulda Clark and Dr. Bob Beck [1, 2] have also applied electric current stimulation to control parasites of various types. They based their studies on the

assumption that because every species has a unique vibration rhythm, resonance induced by special electric current may destroy a parasite without harming either the host or other micro-organisms. Epidemiological data reveal that fungi are becoming the most frequent etiological factor for infections [3, 6] and treatment of chronic mycosis is still a problem [4]. Support from alternative treatment methods is therefore becoming more and more popular.

## Materials and Methods

Broth cultures of *Candida albicans* cells were subjected to the flow of alternate current from an electronic device that generated a square wave with a frequency of about 30 kHz. The basic source of alternating current used in the laboratory study was the Medikzap device that generates a square wave current of a basic frequency within 25 – 40 kHz. This means it has a rich spectrum of harmonic components of over 1 MHz. The square wave generated by the Medikzap device has a positive polarization (*off-set*) *i.e.* a constant voltage component that is responsible for the displacement of the square wave from the horizontal axis (Fig.1-1). A current symmetrical to the horizontal axis *i.e.* with no constant component added was also used in the

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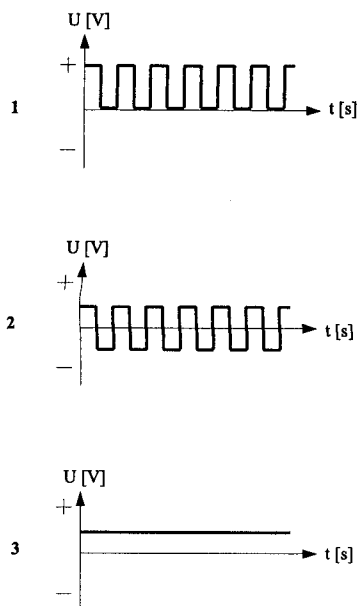


Fig. 1. Three electric currents.

1. A square wave current with a constant component added – positive off-set.
2. A square wave symmetrical current *i.e.* with no constant component added.
3. A direct current (D.C.).

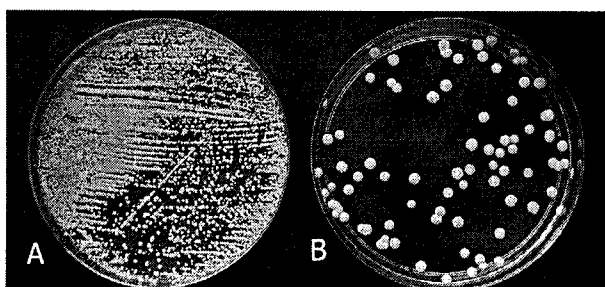


Fig. 2a. Petri slides with *Candida Albicans* fungus cultures.  
 A – Reference slide.  
 B – In the fungus culture subjected to Medikzap device (generating a square wave current with a constant component added – positive off-set) the *Candida albicans* cell count was reduced as compared to reference slide.

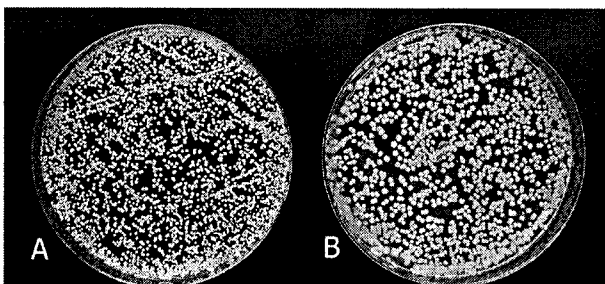


Fig. 2b. Petri slides with *Candida Albicans* fungus cultures.  
 A – Reference slide.  
 B – The square wave symmetrical current *i.e.* with no constant component added had no effect on the *Candida albicans* cell count and growth.

study (Fig. 1-2) as well as a source of direct current (D.C.) with a voltage equal to the root mean square (r.m.s.) voltage generated by the Medikzap (Fig. 1-3). The three electric currents were run through broth cultures of *Candida albicans* for 7 minutes daily during a period of 5 days. The fungus cell count and growth were compared to those of the reference culture. At the end of each day, the micro-organism count in 1 mL of culture was determined, followed by inoculation in the Sabouraud agar medium with antibiotics and was grown according to standard mycological procedures [6].

### Results

The study confirmed a significant reduction of *Candida albicans* cell count in the culture subjected to positive off-set type current (Fig.1). A square wave symmetrical current (Fig. 2) has no effect on the fungus cell count and growth (Fig.3), while direct current (D.C.) stimulates rapid *Candida albicans* cell count and growth.

In the culture subjected to asymmetric pulse current generated by Medikzap, agglomerates at the bottom of the beaker were observed. On the microscopic slide of the sedimented agglomerates, clusters of fungus cells were clearly visible.

### Discussion

Nowadays natural medicine offers a substantial number of devices designed for cleansing the organism. They differ in the shape of generated voltage and in their effect on micro-organisms. The results of our *in vitro* study confirm different effects of three types of electric current on the *Candida albicans* fungus cells. In the fungus culture subjected to the Medikzap device designed by the Medi-Flowery Company Ltd. (generating a square wave current with a constant component added – positive off-set) the *Candida albicans* cell count was reduced as compared to control culture. The square wave symmetrical current *i.e.* with no constant component added had no effect on the

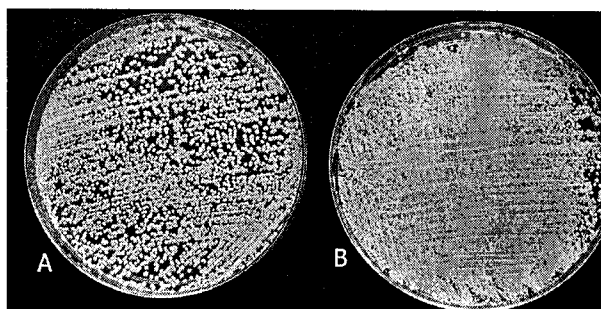


Fig. 2c. Petri slides with *Candida Albicans* fungus cultures.  
 A – Reference slide.  
 B – Direct current (D.C.) resulted in a marked increase of the *Candida albicans* cell count as compared to the reference slide.

*Candida albicans* cell count and growth, while direct current (D.C.) resulted in a marked increase of the *Candida albicans* cell count as compared to the reference group. It is therefore of paramount importance to select a device that generates an appropriate electric wave, otherwise no treatment effects can be guaranteed. Thus the efficacy of a selected device should be confirmed by results of reliable laboratory tests.

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