

Influence of non-thermic AC magnetic fields on spore germination in a dimorphic fungus

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Summary. The influence of weak pulsed magnetic fields of low frequencies on the germination rate of *Mycotypha africana* was tested. This fungus grows as a mycelium (M-culture) or in a yeast-like form (Y-culture) depending upon culture conditions. 5 h and 24 h of field application enhanced the germination rate in a Y-culture up to 2 or 3 times at low intensity levels and decreased it up to a factor 4 at the intensity level "4". M-cultures exhibited the same reaction pattern after 5 h exposition and no effect after 24 h exposition. The Y/M ratio is shifted by low field intensities towards the Y-form. The occurrence of stimulation as well as retardation by neighbouring intensities is discussed.

Introduction

In recent years the impact of non-ionizing, non-thermic electromagnetic (EM) fields on biological systems attracted increasing interest for various reasons. On the one hand, medical applications of electric/magnetic fields ("electrostimulation") for wound or bone healing, for hyperthermia and for curing rheumatic diseases, pain, spasticity or epilepsy became more frequent (Kavet and Banks 1986). On the other hand, "environmental" hazards by electromagnetic fields from power lines, machines, household equipments and computers came into discussion (Aldrich and Easterly 1987; Bernhardt 1988). Besides the various effects produced by these strong fields, also extremely weak fields seem to have an impact on living cells. The bioelectrochemical paradoxon that relatively weak electric fields may alter the very strong fields of the cell membrane is well-known and merits increasing attention. Moreover, there are hints in the literature indicating that EM fields may be active only within certain "windows" of frequency and/or field strength (see e.g. Grattarola et al. 1985) and that part of the controversy about these low field effects may be due to not properly matching such windows.

Recently, bio-effects of pulsed (electro)magnetic fields (PEMF, PMF) were reported by several authors. Some of the results obtained concern very different