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***Poster Section***

# The activity of enzymes can be modified by homeopathic dilutions of their effectors

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## ABSTRACT

**Introduction**: The fungal and bacterial materials are very useful for testing the influence of low and very low doses of low molecular phenolic effectors on enzymatic system of phenoloxidases when they are incubated together in the reaction space.

**Aim**: Searching for the model useful biological systems to study the action of diluted low molecular substances on living organisms, which is based on common physical and biochemical analytical procedures.

**Methods**: The fungal and actinomycetal bacterial materials from laboratory cultures as a source of common phenoloxidases, laccase, peroxidase and O-demethylase as well as the pure plant peroxidase were used in experiments described earlier [1-5]. Subsequent dilutions of low molecular phenolic metabolites, appropriate for studied enzymatic systems, prepared in 75% ethanol in the proportion of 1:100 (centesimal) and dynamized by shaking in accordance with homeopathic procedures were prepared in our laboratory. During experiments with bacterial and fungal materials and a pure plant peroxidase, which were incubated together with subsequent dilutions of proper phenolic effector, different analytic methods were used including a gel (PAGE) [4] and capillary (MEKCE) electrophoresis [5], spectral and colorimetric methods [1,2,3] as well as the electron microscopy [5].

**Results**: In the light of presented data [1-5], the incubation of biological material with diluted phenolic effectors induces various effects on tested enzyme activity. It changed in sinusoidal manner with a gradual growth of dilution rate of tested effectors, which was distinctly visible on the diagram when the number of dilutions was localized on abscissa and biological activity on the ordinate.

Exemplary results of the chosen experiments will be presented. For tested enzymes: laccase, peroxidase and O-demethylase, the distance between maximal points of enzymatic activity, shown on a sine curve, repeats more often every 10 subsequent centesimal dilutions. Along with the extension of incubation period the displacement of maximal and minimal points on curve were noticed, which revealed a dynamic aspect of studied phenomenon.

**Conclusions**: Fungal and bacterial cells seem to be a very convenient material for studying the action of diluted metabolites on enzymatic systems because their popular presence in environment. Results of all experiments confirmed the same nature of the mentioned observations. Because other authors had similar conclusion concerning human [6,7] and plant materials [8,9], the described relations seem to be common in natural world. It could also be stressed that the therapeutic effect of homeopathic remedies could be based on the mechanism described above and it is highly probable that it leads to a normalisation of disturbed enzyme systems in the living organisms.

**Keywords**: enzymes, effectors, biological activity


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