I dedicate to
blessed memory of
Ozhogin V.I. and Kurdyumov S.P.

Tweezers and scalpel for biotechnology

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The main obstacle to the implementation of biotechnology is the lack of a selective "scalpel and tweezers" for working with biosystems, microorganisms, microbes, viruses, biomolecules and particles with small sizes, including less than 10^{-9} m.

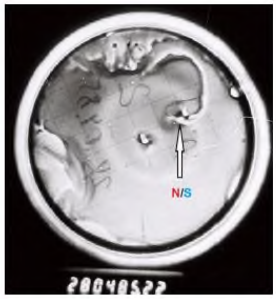
The idea of such a scalpel came to me in 1984. The reason was the painful search for effective methods of treating cancer and other complex diseases based on a synergistic approach. After numerous meetings with V.I. Ozhogin and S.P. Kurdyumov and discussions of the methods of MRI, EHF-therapy and SQUIDs (for MEG), the final solution for such an idea was formed.

The essence of the solution [1] consisted in a resonant spatially selective action in inhomogeneous fields on nuclear and electron spins [2], spin isomers [3-4] due to NMR-EPR [5] in certain spatially localized points-regions of biosystems (in particular, implementation of the idea of spatially selective action on the active points of the brain).

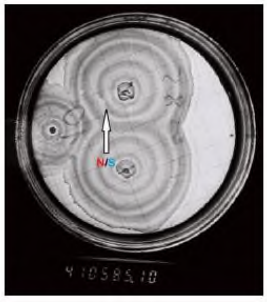
In 1984, the proposed method of selective scalpel was tested on the basis of the growth of colonies of bacteria of the genus Proteus. Assistance in carrying out the experiments was provided by the staff of the Department of Microbiology of the IGMA L.D. Osipov and P.S. Timonov.

The results of the experiments carried out in April-May 1984 are shown in Pic. 1-4.

Pic. 1. Experience scheme.



Pic. 2. Standard inoculation and growth of bacteria of the genus Proteus.



Pic. 3. Proteus growth, with synchronization, without microwave.

Pic. 4. Proteus growth, with microwave and synchronized.

Instruments and experimental conditions: generator "LUCH-3" (frequency 2.375 GHz); thermostat TS-80; microwave resonator (H_{101}); SmCo magnet (cylinder, 6*8 mm^2); spot sowing; synchronization - cold (5^o C, 8 h). Features of the results of the experiments: Fig. 3 - weakening of growth at the location of the magnet; Pic. 4 - cessation of growth at the location of the magnet (resonance ~ 2.8 MHz / Oe).

The decision to publish the results of 1984 was made by me after the events that have become known to me and occurred [1-7], including 2019-2020.

[1] V.G. Shironosov. Tweezers and scalpel for nanotechnology. International Forum on Nanotechnology, Moscow, 3-5 December, (2008).
[2] V.G. Shironosov. On the stability of unstable states, bifurcation, chaos of nonlinear dynamical systems. - DAN USSR, t. 314, No. 2, p. 316-320, (1990).
[3] V.G. Shironosov. The problem of two magnetic dipoles taking into account the equations of motion of their spins. - Izv. universities, Physics, vol. 28, No. 7, pp.74-78, (1985).
[4] S.M. Pershin. Quantum differences between ortho and pair of spin isomers of H2O as a physical basis for anomalous properties of water. Nanostructures. Mathematical Physics and Modeling, vol. 7, No. 2, pp. 103–120, (2012).
[5] V.G. Shironosov. Resonance in Physics, Chemistry and Biology. - Izhevsk. Publishing house "Udmurt University", 92 p. (2000).
[6] Liu Chenli and another. Sequential Establishment of Stripe Patterns in an Expanding Cell Population. Science vol. 334 (6053), p. 238-241, (2011).
[7] NMR Therapy - made in Germany (1998). MBST - Magnetic Resonance Therapy (2020).

Translated by Shironosova O. E.
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