Micro Evolutionary Processes and Adaptation

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It would be well to note that in the absence of clear data about the formation of adaptation systems, or mechanisms of their occurrence, all that is recognized is the realization of the micro evolutionary processes. There is no well-defined connection between information exchange and formation of adaptation systems. Obviously, it occurs because mechanisms and systems reacting to any external actions are not considered from the point of view of "coexistence" of dynamic and static processes and structures. Transition to population level where there is an interaction between living organisms and their environment, is complicated enough, as processes of interaction are based on the exchange of information fields. This process was defined ad biogeocenosis, and in the biogeocenosis, there are transferred signals of control to point-to-point circuit and to feedback channel from a parent population to a daughter population and from a population to biogeocenosis. These signals are nothing more than information fields. These fields are developing at micro-, meso - and macroscopic levels, creating a total information field of a population and its environment. The information field of the whole population influences organisms on the population level in different ways. In this connection, in spite of the fact that all hereditary fixed traits of living systems are realized, formation of adaptive systems acts differently, despite of the uniform genome within the limits of a population. That is why it is possible to select the most or the least adaptive forms of living organisms. This principle underlies development of technologies leading to increase of resistance of organisms to environmental factors, and the formation of populations of adaptive genotypes. The systems of survival generated in the course of evolution are the most reliable. As a rule they function during the ontogenesis not only in stress, but also in optimum conditions. However the change of environmental conditions for varietal populations is, as a rule, too fast for occurrence of evolutionary adaptations. In this case, plants use not constant but induced by stressor protective mechanisms, which formation is genetically determined. Ontogenetic or phenotypic active adaptations provide a survival of the given individual. The obligatory requirement of survival is the induction of enzymes with new properties or new proteins providing cell protection. Because of heterozygosis of a population, influence of total information of separate plants causes the various biochemical responses of these separate plants and this response is expressed in qualitative change of proteins and enzymes. The major role in maintenance of the general homeostatic character of a population belongs to equilibrium of information fields of general population field and of each organism field separately. The result of equilibrium will be different.