

**SCIENTIFIC AND PRACTICAL
IMPORTANCE OF TRACE ELEMENTS
(НАУКОВА І ПРАКТИЧНА ВАЖЛИВІСТЬ МІКРОЕЛЕМЕНТІВ)**

Борисенко В.В., гр. ХТ-18

Науковий керівник – ст. викл. **Л.А. Подворна**
Харківський державний університет харчування та торгівлі

Елементи в природі присутні в різних формах, і ці елементи дуже важливі для того, щоб організм виконував різні функції.

Elements are present in different forms in the nature, and these elements are very essential for the body to perform different functions. Trace elements are very important for cell functions at biological, chemical and molecular levels. These elements mediate vital biochemical reactions by acting as cofactors for many enzymes, as well as act as centers for stabilizing structures of enzymes and proteins. Some of the trace elements control important biological processes by binding to molecules on the receptor site of cell membrane or by alternating the structure of membrane to prevent entry of specific molecules into the cell. The functions of trace elements have a dual role. In normal levels, they are important for stabilization of the cellular structures, but in deficiency states may stimulate alternate pathways and cause diseases. E.J. Underwood's discovery of the essentiality of cobalt for ruminant animals is the classic example of the vast benefits to agricultural production of research into the nutritional significance of trace elements. The extension of this discovery, culminating in the identification of vitamin B₁₂, resulted in similar benefits for human health, notably the conquest of pernicious anemia. Since then, additional essential trace elements have been discovered. Deficiency or imbalance, whether occurring naturally or from human activities, has been shown to present significant problems for the health of man and animals. Essentiality has been proved for a rapidly growing range of 'new' trace elements, whose biochemical mechanisms of action and implications for human health are unknown. In spite of an increasing knowledge of significant changes in the exposure of man and animals to trace elements from diet and environment, the concern of nutrition policy planners for inorganic micro-nutrients remains overshadowed by that for the bulk components of the diet. The application of existing knowledge of trace element nutrition to problems of human and animal health will depend on a clear understanding of events that link molecular, biochemical mechanisms to the clinical manifestation of deficiencies.