

Digital Technologies For Medicine: System For Analysis Of Harmful And Toxic Substances

Abstract

Digital technologies permit to invent powerful tools for medicine. In computer sciences expert systems were invented as models of experts' behavior in different fields (medicine, biology) basing on databases (DBs), and using procedures of logical conclusions and decision making [1]. The purpose of present work was on the base of examination of information systems with expert subsystems (their structure, functions, practical applications), to develop new expert system for solving practical problems in medicine, laboratory practice, environmental monitoring. Used methods: comparative research, program and imitation simulation, based on experimental results of neuronal chemoactivated transmembrane electrical currents recordings in voltage clamp mode. Such original expert system was developed with incorporated interface, detector groups, DBs. Expert system can automatically distinguish some types of input chemicals, output their characteristics and reports about harmfulness on display. Some novel regularities substanceeffect were discovered and put in base of this expert system. Novel methods of qualitative and quantitative analysis of some organic compounds were developed on this base. Information about specificity and practical value of developed expert system will be suggested. It can be used for medical purposes, monitoring of toxic and harmful substances in organism or environment, etc.

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Biography

Olena (Elena) Klyuchko- has 3 specialties: PhD (biophysics), Magisterial (computer sciences), Bachelor (linguistics). Obtained her education in the best Universities of Ukraine, Italy, Great Britain. She worked as researcher for a long time at Kyiv Institute of Physiology and Elbrus Medico-Biological Station of National Academy of Sciences, Ukraine (EMBS NANU), etc. She specialized in biophysics of the brain, influence

of chemicals on organisms, development of information technologies for medicine and biology (including information system for monitoring of chemicals in environment "EcoIS" with telecommunication elements). Currently she is Associate Professor of National Aviation University (Kyiv, Ukraine); has 262 scientific publications..