

AN EXPERT SYSTEM FOR ULTRASTRUCTURAL MORPHOMETRIC CHARACTERIZATION

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An algorithm has been developed in Microsoft Basic on an ESPL PC AT for ultrastructural morphometric characterization of nuclei, nucleoli, Rambourg's positive and Rambourg's negative granules etc. of beta-islet cells in Malnutrition Related Diabetes Mellitus (MRDM), Non-Insulin Dependent Diabetes Mellitus (NIDDM), Insulin Dependent Diabetes Mellitus (IDDM), Maturity Onset Diabetes of the Young (MODY) and pancreatic endocrine tumors. Software conversion of the microsoft Basic program into 'C' language and Turbo-Prolog resulted in an expert system which can compute and analyse Anteroposterior to transverse ratio (ATR), Presumed circle area ratio (PCAR), Assymetry index (ASI), Volume density (VD), Surface density (SD), Numerical density (ND), Dissimilarity index (DSI), Nuclear contour index (NCI), Relative nucleolar eccentricity (rNE), Mitotic activity index (MAI), Morphometric prognostic index (MPI), Isoperimetric inequality (ISI) etc. and display the most probable ultra-structural diagnosis. A sample run of the program on morphometric data obtained from a Kontron image analyser will be discussed.