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Optimized FPGA Implementation of the Thyroid Hormone Secretion Mechanism Using CAD Tools
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Abstract
The goal of this paper is to implement the secretion mechanism of the Thyroid Hormone (TH) based on bio-mathematical differential eqs. (DE) on an FPGA chip. Hardware Descriptive Language (HDL) is used to develop a behavioral model of the mechanism derived from the DE. The Thyroid Hormone secretion mechanism is simulated with the interaction of the related stimulating and inhibiting hormones. Synthesis of the simulation is done with the aid of CAD tools and downloaded on a Field Programmable Gate Arrays (FPGAs) Chip. The chip output shows identical behavior to that of the designed algorithm through simulation. It is concluded that the chip mimics the Thyroid Hormone secretion mechanism. The chip, operating in real-time, is computer-independent stand-alone system. © 2017, Springer Science+Business Media New York.

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