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The Biopsychology of Enzymatic Degradation

Enzyme degradation is one of the important central processes that controls the chemical surrounding of the nervous system. Enzyme plays as bio catalysts that end neurotransmitter signals and also clear possible toxic proteins and maintains synaptic homeostasis. Imbalance of these processes is closely connected to cognitive end, mental illness, and neurodegenerative disordes, placing enzyme breakdown at the joining of biochemistry and psychology. It plays a important role in making neural signaling, protein homeostasis, and sensitivity to neurological disorders. The present review discusses about the role of four enzymes involved in the control of brain function and associated pathology. Studies of acetylcholinesterase activity have highlighted how catalytic efficiency varies with substrate concentration, pH, and temperature, while also revealing the role of specific inhibitors in modulating cholinergic signaling—an essential pathway in cognitive function. Investigations into the proteolytic degradation of amyloid-β peptides have demonstrated that monomeric forms are more readily broken down than aggregated species, providing insight into the molecular basis of amyloid accumulation observed in Alzheimer's disease. Additionally, monoamine oxidase assays have underscored substrate-dependent kinetics and selective inhibition, particularly in the enzymatic breakdown of dopamine and serotonin, with implications for understanding the biochemical underpinnings of mood regulation and psychiatric

disorders. Together, these findings offer a framework for exploring enzyme-mediated pathways central to neurobiology and neuropathology.

Keywords: Acetylcholinesterase, Amyloid-β degradation, Monoamine oxidase, Enzyme kinetics, Neurodegeneration, Cholinergic signaling

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