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DETECTION OF DUCHENNE MUSCULAR DYSTROPHY THROUGH BIOCHEMICAL TESTS AND ANALYZING PROTEIN-DRUG INTERACTIONS

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ABSTRACT

Duchenne muscular dystrophy (DMD) is a muscle-wasting illness that progresses rapidly. The early signs are difficulty in mounting stairs, a waddling gate, and frequent falls, which appear at the age of 2–3 years. Around 10–12 years of age, most patients become wheelchair reliant, and around 20 years of age, they require assisted ventilation. Most DMD patients die between the ages of 20 and 40 from cardiac and/or respiratory failure if they get the best possible care. DMD is caused by mutations in the DMD gene (which codes for dystrophin) that prohibit the muscle isoform of dystrophin from being produced (Dp427m). The reading frame rule helps explain the diverse spectra of illnesses. Dystrophins N- and C-terminal domains connect cytoskeletal F-actin to the extracellular matrix in muscle. Mutations in the DMD gene (which codes for a protein named dystrophin) cause the illness by preventing dystrophin synthesis in muscle. Muscles lacking the protein dystrophin are more vulnerable to injury, leading to progressive muscle tissue and function loss, as well as cardiomyopathy. It is inherited as an X-linked disease. Scientists have been attempting to establish an effective therapeutic approach for decades, but there is presently no absolute cure for individuals with DMD.

However, a number of intriguing gene treatments are currently being researched. Gene substitution, exon skipping, and stop codon suppression are examples of these techniques. Early screening of Duchenne Muscle Dystrophy by biochemical tests will allow us to discover the disorder in the infant stage, improving the child quality of life will be improved with therapeutic treatment and correct nutrition. In addition to it, there are certain analytical techniques that helps to understand and map the protein interactions. The information that points out the essential proteins for a certain disorder/disease can be important to know about the disease progression.