FALL 2020

Biochemistry and Molecular Biology Brown Bag Series

Rajsi Thaker

M.S. Student

"Potential Drug Treatment for Duchenne Muscular Dystrophy through Upregulation of Lipin1"

Tuesday, November 3, 2020

11:00 AM

Blackboard Collaborate

https://us.bbcollab.com/guest/63a1b38f991a44808125ab87d4766c20

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https://science-math.wright.edu/biochemistry-and-molecular-biology

Abstract

Potential drug treatment for Duchenne muscular dystrophy through upregulation of lipin1

Duchenne muscular dystrophy (DMD) is a genetic disorder leading to progressive muscle degeneration and weakness due to mutation in dystrophin gene, which is very important for maintaining muscle membrane integrity. There is currently no cure for DMD. Our lab recently found that lipin1 is important for muscle membrane integrity. Our recent study identified that upregulation of lipin1 expression in mdx mice, mouse model of DMD strengthened membrane integrity and reduced muscle fiber degeneration. In this study, we identified two drugs i.e. dexamethasone which is a glucocorticoid and rosiglitazone which is PPARγ agonist, can elevate lipin1 mRNA and protein expression levels. Mdx mice treated with dexamethasone for two weeks elevated lipin1 expression levels and downregulated necroptotic and apoptotic markers including RIPK1, RIPK3, MLKL, BAX and BAK. Most importantly, muscle membrane integrity indicated by IgG staining was strengthened after treatment which could be associated with upregulation of lipin1 expression. Overall, data suggest that dexamethasone could ameliorate the dystrophic phenotype in mdx mice through upregulation of lipin1 expression.