**Years in Course:** 3 (Senior)

**Topic:** Medicine & Health

**Title:** The Effects of 20-HETE Antagonism on Myocardial Infarction in

Metabolic Syndrome rats

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**Abstract:**

20-hydroxyeicosatetraenoic acid (20-HETE) is an eicosanoid metabolite of [arachidonic acid](https://en.wikipedia.org/wiki/Arachidonic_acid) that has a wide range of effects on the vascular system such as Collateral cell growth, vascular rebuilding of the heart. Metabolic Syndrome and 20-HETE have been shown to be correlated together. There is a higher concentration of 20-HETE in Metabolic Syndrome patients. With a higher concentration of 20-HETE, patients with Metabolic syndrome have symptoms that are more severe. The effect of elevated 20-HETE is negative and can influence cell growth after a Myocardial Infarction. Myocardial Infarction (MI) is another term for a heart attack. In previous studies, it shows MI size increases with an elevated level of 20-HETE. During the study, the Metabolic Syndrome rats and control group of rats are induced with an MI for 30-minutes. After rats from both groups are given an MI and a 20-HETE antagonist named 20-SOLA. 20-SOLA counteracts 20-HETE levels and the treatment was given to the rats at 48 hours, 1 week and 8 weeks. The results indicated that the AMPK for both total and phosphorylated showed at 48 hours the JCR rats had a decrease in ischemic damage while in the SD rats there was no change. 20-SOLA was found to create an equilibrium in 20-HETE levels in tissue samples and significantly more in JCR MI rats. 20-SOLA aided the decrease in ischemia for both rats, but again results indicate a more reliable significance in JCR MI rats. These findings are relevant to the epidemic of cardiovascular diseases plaguing populations globally.