

12-5-2018

# Vitamin E: A Possible Preventative Measure for CTE

Dylan Roth

*Marian University - Indianapolis, droth201@marian.edu*

Cameron Dargis

*Marian University - Indianapolis, cdargis072@marian.edu*

Follow this and additional works at: <https://mushare.marian.edu/urs>

 Part of the [Cell Biology Commons](#)

## Recommended Citation

Roth, Dylan and Dargis, Cameron, "Vitamin E: A Possible Preventative Measure for CTE" (2018). *Undergraduate Research Symposium (URS)*. 15.

<https://mushare.marian.edu/urs/15>

This Poster is brought to you for free and open access by the College of Arts and Sciences at MUShare. It has been accepted for inclusion in Undergraduate Research Symposium (URS) by an authorized administrator of MUShare. For more information, please contact [emandity@marian.edu](mailto:emandity@marian.edu).



# Vitamin E: A Possible Preventative Measure for CTE

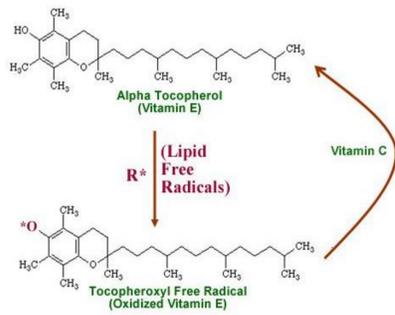
Cameron Dargis, Dylan Roth

College of Arts and Sciences, Marian University Indianapolis  
3200 Cold Spring Rd, Indianapolis, IN 46222



## ABSTRACT

### Vitamin E Oxidation



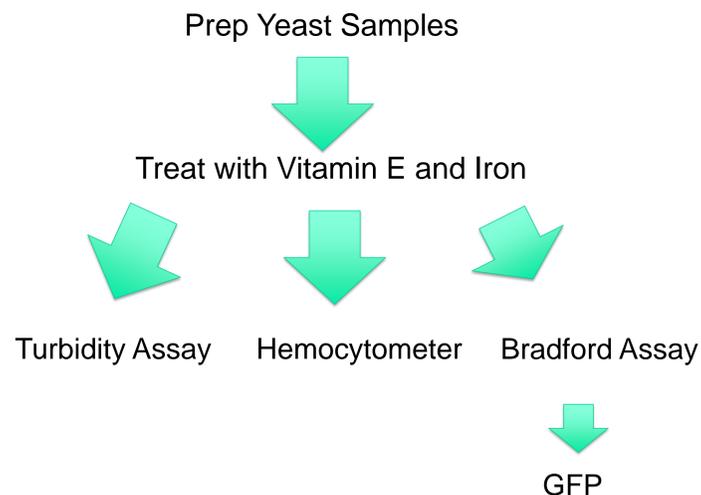
## INTRODUCTION

- This experiment is aimed to aide all future athletes.
- The brain injury known as CTE can only be diagnosed after death and upon autopsy.
- Upon research, what causes this is non-heme Iron deposits in the brain cause radical oxygen species that damage the nerve cells.
- Causes many different mental and physical problems
- Research on Vitamin E showed that it can accept radical oxygen species and increase neurological health.
- We will be testing these affects on yeast samples

## HYPOTHESIS

- If yeast is treated with Vitamin E before being exposed to radical oxygen species via non-heme iron, then it will have a higher survivability than the non-treated yeast samples.

## MATERIALS AND METHODS



## TURBIDITY ASSAY

- Treated yeast samples with vitamin E and iron
- Turbidity assay was used to give us a visual on how well the yeast could survive in the iron dense environments
- Good first method to evaluate the yeasts viability

Tube	Viability
1	283.7
2	437.2
3	422.8
4	216.4
5	195.3

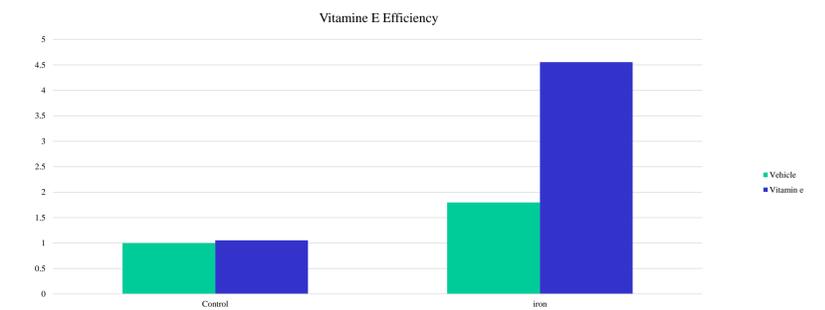
## HEMOCYTOMETER

- Same solutions used for this as in the turbidity assay
- When counting dead and alive cells we were surprised it affected the reproductive abilities more than the viability of the cells
- This helped prove that the vitamin E was helping decrease the amounts of dead cells, but did not give us enough evidence

Tube	Alive	Dead	Trypan Blue (ml)	PBS (ml)
1	332	3	40	10
2	47	1	40	10
3	85	1	40	10
4	100	2	40	10
5	68	0	40	10

## GFP

- Shows yeasts natural and treated ability to fight off radical oxygens
- Slight increase when no radical oxygens present due to lack of them
- Dramatic increase in ability when non-heme iron was introduced



## CONCLUSIONS

- First two methods were not successful, but the GFP gave us the results we needed
- Results show that Vitamin E inhibits the radical oxygens reacting with non-heme iron
- This experiment can a pivotal one in the future mental states of all contact sport athletes.
- The applications of this experiment can lead to many new and pivotal information on CTE.
- The next step for this experiment would to try different time intervals and introduce it to human trials
- Bringing more awareness to this subject may be vital to preventing thousands of mental issues for all athletes.

## LITERATURE CITED

- [1] Aiguo Wu, Zhe Ying, & Gomez-Pinilla, F. (2009). Vitamin E protects against oxidative damage and learning disability after mild traumatic brain injury in rats. *Neurorehabilitation and neural repair*, 24(3), 290-8.
- [2] Nisenbaum, E. J., Novikov, D. S., & Lui, Y. W. (2014). The presence and role of iron in mild traumatic brain injury: an imaging perspective. *Journal of neurotrauma*, 31(4), 301-7.
- [3] Vitamin E natural compounds Alpha-Tocopherol a.k.a. Vitamin E. - ppt download. (n.d.). Retrieved from <https://slideplayer.com/slide/5808545/>
- [4] Zhang, S., Qin, X., Lu, H., Wan, M., and Zhu, Y. (2016) The influence of vitamin E supplementation on yeast fermentation. *J. Inst. Brew.*, 122: 289-292. doi: 10.1093/ib/122.3.289

## ACKNOWLEDGMENTS

Thank you to Dr. Doci and Kegan Main for aiding us in these experiments in lack of other partners.