



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Paytra A. Klein</b>	<b>Project Number</b> <b>S1205</b>
<b>Project Title</b> <b>Onions to Treat Dry Eyes Syndrome</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Keratoconjunctivitis Sicca, the medical name for dry eyes is a common problem occurring in 10-20% of people. Patients experience itchy or a gritty or tired sensation and can have vision loss. All of the available ophthalmologic topical solutions are chemicals and have preservatives. This experiment used onions as a natural treatment for dry eye syndrome.</p> <p><b>Methods/Materials</b> Materials: yellow and purple onions, mini hand held veggie chopper Sample size: 20 people Age range 16-83 , 16 Females and 4 Males, 12/20 had history of dry eyes</p> <p>20 people were exposed to onions to make their eyes tear, 1) the patients were surveyed on their immediate reaction 2) and patients were asked if their eyes were moister over the next 12 hours</p> <p><b>Results</b> The Results of this experiment are interesting in that 19/20 patients noted that onions made their eyes water(at least a little) and most patients noted that their eyes were less dry immediately and during the following 12 hours. One patient who did not notice any tear production was a patient with olfactory dysfunction (lack of smell). This made us think that the olfactory sense is a necessary part of the mechanism of our tear production caused by onion enzymes. The patient who wore contact lenses was tested twice and she noted slight watering of her eyes. She reported a benefit for the rest of the work day. We know that contact lens wearers struggle with dry eyes and we propose that this group of patients may benefit from our experiment. Fortunately, none of our patients experienced any detrimental side effects.</p> <p><b>Conclusions/Discussion</b> The results of this experiment are promising, 19 out of 20 patients had some benefit using onions to treat their dry eyes. Onions are a natural and safe alternative to the pharmaceutical solutions (chemicals and preservatives) currently available. Future experiments need to include better techniques for onion delivery, larger same size, and longer treatment periods for our patients. I proved my hypothesis : Onions make eyes water and can benefit patients with Dry Eye Syndrome.</p>	
<b>Summary Statement</b> Onions are a safe and natural way to help patients with dry eyes.	
<b>Help Received</b> Thank you to my STEM advisor Mr. Alan Krause	