



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

<b>Name(s)</b> Natalie S. Dimes	<b>Project Number</b>  34634
<b>Project Title</b> Fry and Reuse	
<b>Objectives/Goals</b> The purpose of this experiment is to find the most effective type of fruit peel that lowers the oxidation of oil. Once this is discovered, the frying oil will be able to be reused more than twice and lower the chance for oxidation. This would allow for the reuse of frying oil for multiple times and for longer periods. This benefits human health and takes advantage of unused fruit peels, instead of throwing them away. <b>Abstract</b> The purpose of this experiment is to find the most effective type of fruit peel that lowers the oxidation of oil. Once this is discovered, the frying oil will be able to be reused more than twice and lower the chance for oxidation. This would allow for the reuse of frying oil for multiple times and for longer periods. This benefits human health and takes advantage of unused fruit peels, instead of throwing them away. <b>Methods/Materials</b> Twenty five grams of each type of peel was measured to be added to the same volume of frying oil before heating. The peels were then fried for 15 minutes and then removed from the oil which was left to cool down. The same steps were repeated with the used oil again twice. This process of frying was then done again with French fries and peels and with French fries alone. Finally, the oil by itself was heated 15 minutes each time as well. The temperature was 160°C±2 during all the heating steps. All steps of the experiment were done three times for accuracy. Samples were taken from each frying trial in addition to a sample of the unheated oil. The samples were tested in a lab using the UV absorption method at 230nm which tests the amount of conjugated dienes formed. # 37 L Vegetable oil, # 4 similar frying pots, # 7200g French fries, # 75g Pomegranate peels, # 75g Orange peels, # 75g Lemon peels, # Deep fry thermometer, # Measuring cup, # 1 knife, # 1 cutting board, # Paper towels, # Masks, # stove, # Funnel, # spectrophotometer, # Marker, # Scale, # Big Spoon, # Thermometer, # Gloves, # Kim wipes, # Small pipettes, # Cuvette, # Pieter, # Graduated pipettes, # Air source with tube and a pipette tip at the end, # 75 Glass testing tubes with caps. <b>Results</b> The results showed that the absorption decreased in most cases by reusing the oil except in the 3rd with heated oil alone and in the presence of the pomegranate peels. The absorption was less with no additions of peels of potato which indicates that all the additions had some conjugated dienes also. <b>Conclusions/Discussion</b> It is recommended to use the pomegranate peels while frying in order for the oil to be reused more times while remaining healthy. If not, then orange would be useful as well. lemon peels are efficient if you fewer times.	
<b>Summary Statement</b> My project is about how we can reuse oil while at the same time keeping its oxidation level low	
<b>Help Received</b> Mother fried the French fires with me; Teacher and Dr. Borthy helped in doing my experiment	