



# CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

<b>Name(s)</b> <b>Jada Smith</b>	<b>Project Number</b> <b>J0627</b>
<b>Project Title</b> <b>Biodiesel: Heat of Combustion</b>	
<div><div><b>Objectives/Goals</b> My goal was to compare the heats of combustion of three different fuels I made from peanut oil, olive oil, and canola oil.</div><div><b>Methods/Materials</b> I used a mini camp stove, water, three different vegetable oils, separating funnel, digital thermometer, digital scale, methanol, sodium hydroxide, steel cans for calorimeter, paper towel and a paper clip to make the wick. I used the sodium hydroxide and methanol to transform the vegetable oil into bio diesel. Next, I used the camp stove to burn the fuel in a homemade calorimeter to calculate the heats of combustion.</div><div><b>Results</b> Peanut oil fuel's average heat of combustion was 13,774 joules per gram. Fuel from olive oil had an average heat of combustion of 9,939 joules per gram. The Canola oil diesel had an average heat of combustion of 14,022 joules per gram.</div><div><b>Conclusions/Discussion</b> Although the average heats of combustion for each fuel differed from each other, my experiment was inconclusive. Because my scale only rounded to the nearest gram, I can't be sure that the differences in heats of combustion aren't just due to the imprecision of my scale. Also, some issues with the procedure I used led to the fuel flaring up, so I'm not as confident in the accuracy of my results.</div></div>	
<b>Summary Statement</b> Because burning fossil fuels increases green house gasses, I wanted to compare the heats of combustion of three renewable biofuels.	
<b>Help Received</b> My sister helped me with the transesterification process. My dad helped me burn the fuel and discussed the scientific terms with me. My dad also helped me make the graphs. My mom proofread my work and helped me set up the board.	