



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2018 PROJECT SUMMARY**

<b>Name(s)</b> <b>Harsha Rohan Rajkumar</b>	<b>Project Number</b>  38162
<b>Project Title</b> <b>Glaze the Glaciers: Polyphenol Coat to Reduce the Melting of Glaciers</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to study how efficiently melting rate can be reduced when polyphenols are coated on Ice</p> <p><b>Methods/Materials</b> 1. Measuring cups, 2. Thermometer, 3. 10 RED HEAT LAMP, power supply, 4. Ice lumps of uniform volumes, 5. Olive Oils, coconut Oil, vegetable oil, 6. Polyphenols from different extracts ex. strawberry extract, vitamin extracts, 7. Weighing Scales.</p> <p><b>Procedures:</b> STEP 1: Freeze equal volumes of water in a similar container. STEP2: Measure 10ml of polyphenols of each concentrates. STEP 3: Then add different oils of different volumes in each cup and mix them thoroughly with a bright food color (3ml, 7ml, and none) Vegetable oil and lubrication oil. STEP 4: Mark each cup with a Name and note down the type, volume of polyphenols, oil STEP5: Apply the coat of the various cups for each ice blocks frozen STEP 6: Keep them under a measure transparent glass that is kept 2 feet from the heat producing light (wait 3 minutes) STEP 7: Start measuring the volume of water collected as the ice starts melting over a period of 3 minutes and record the measures of lost water STEP 8: Repeat the above steps for 5 trials, to get accurate results. STEP 9: Prepare a Chart to understand the melting rate and impact of polyphenols. Step 10: Record results</p> <p><b>Results</b> Ice Blocks with higher proportion of polyphenols melts lesser than those of no or less polyphenol coats under identical conditions. From the experiment I observed 40% of melting rate can be reduced.</p> <p><b>Conclusions/Discussion</b> Polyphenol with the solvent has properties to make it difficult for water molecules to move rapidly. This property helps the ice block containing the coat to resist melting for a longer time than the usual and be hard to melt easily.</p>	
<b>Summary Statement</b> Reducing the melting rate of Glaciers using polyphenols.	
<b>Help Received</b> None. I performed the experiments by myself.	