



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) <p align="center">Edward G. Deeb, III</p>	Project Number <p align="center">J0407</p>
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Project Title <p align="center">Lactase vs. Lactose</p>
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<p align="center">Abstract</p> <p>Objectives/Goals Determine if the amount of lactase has an effect on the process of breaking down sugar molecules in milk.</p> <p>Methods/Materials Procedural Method: 1.-3. Gather and label test tubes and put in racks. 4. In test tubes 1 and 2 pour 20 mL of whole milk. 5. Place 5g of lactase in test tube 2. 6. Pour 20 mL of distilled water into test tube 3 and put in 5g of lactase. 7. Pour 20 mL of corn syrup into test tube 4. 8.-9. Test tubes sit overnight and use chemstrips to detect sugar. 10. Fill a large beaker halfway with water, heat top. 11. Heat water to almost boiling on the burner. 12. Place all test tubes into the water bath. 13. Add 5 mL of Benedict's solution to each test tube. 14. Record any color changes. 15. Repeat the project using 2g of lactase.</p> <p>Materials: 1. Balance; 2. 9 Beakers; 3. Benedict's solution; 4. Camera; 5. Goggles; 6. 9 graduated cylinders; 7. Grease pencil; 8. Burner; 9. Lactase; 10. 9 medicine droppers; 11. Whole milk; 12. 16 test tubes; 13. 4 test tube racks; 14. A pair of mittens; 15. Water; 16. Distilled water; 17. White corn syrup.</p> <p>Results The Amount of Lactose Detected-5g of Lactase</p> <p>Chem Strips</p> <table border="1"> <thead> <tr> <th>Test Tube</th> <th>Content(s)</th> <th>Lactose mg/mL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20mL Whole Milk</td> <td>100</td> </tr> <tr> <td>2</td> <td>20 mL Whole Milk-5g of Lactase</td> <td>250</td> </tr> <tr> <td>3</td> <td>20mL Distilled Water-5g of Lactase</td> <td>Negative</td> </tr> <tr> <td>4</td> <td>20mL Corn Syrup</td> <td>250</td> </tr> </tbody> </table> <p>Benedict's Solution</p> <table border="1"> <thead> <tr> <th>Test Tube</th> <th>Content(s)</th> <th>Color</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20mL Whole Milk</td> <td>Orange</td> </tr> <tr> <td>2</td> <td>20 mL Whole Milk-5g of Lactase</td> <td>Yellow</td> </tr> <tr> <td>3</td> <td>20mL Distilled Water-5g of Lactase</td> <td>Negative</td> </tr> <tr> <td>4</td> <td>20mL Corn Syrup</td> <td>Brown</td> </tr> </tbody> </table>	Test Tube	Content(s)	Lactose mg/mL	1	20mL Whole Milk	100	2	20 mL Whole Milk-5g of Lactase	250	3	20mL Distilled Water-5g of Lactase	Negative	4	20mL Corn Syrup	250	Test Tube	Content(s)	Color	1	20mL Whole Milk	Orange	2	20 mL Whole Milk-5g of Lactase	Yellow	3	20mL Distilled Water-5g of Lactase	Negative	4	20mL Corn Syrup	Brown
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Summary Statement Does the amount of Lactase have an effect on the process of breaking down sugar molecules (Lactose) in milk?
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Help Received - My science teacher, Mrs. Westhart, for providing support with my idea for the project, allowing me to borrow supplies, and she answered any questions I had. My parents for buying me what supplies I needed.
