



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Julia M. Abele	Project Number J2101
Project Title Dissolving Diphenhydramine: What Is the Most Efficient Form and Brand of Diphenhydramine?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I conducted this experiment to determine which form (tablet, capsule, or liquigel) and which brand (Benadryl, CVS, or Walgreens) of quick-relief allergy medicine (diphenhydramine) dissolves the fastest in simulated stomach fluid and thus offers the fastest relief.</p> <p>Methods/Materials To make the stomach fluid, I used 150 milliliters of water and 75 milliliters of hydrochloric acid. I placed a diphenhydramine tablet in the fluid, swirled every two minutes, and measured how long the tablet took to dissolve. I conducted this process for Benadryl, CVS, and Walgreens tablets, capsules, and liquigels. I conducted six trials.</p> <p>Results The tablets (at just over 10 minutes on average) dissolved faster than the capsules (nearly 30 minutes) and liquigels (over an hour). The Benadryl tablets dissolved the fastest, but the Benadryl liquigels were the slowest.</p> <p>Conclusions/Discussion The results and data support my hypothesis that the gelatin or silica gel coating on the capsules and liquigels delays dissolution. Also, the Benadryl tablets dissolved faster than their generic equivalents, supporting my hypothesis that Benadryl's unique combination of ingredients, including the superdisintegrant croscarmellose sodium, aids dissolution. The CVS tablets, which have a different superdisintegrant, were not far behind. The next time I have an allergic reaction, I will take a Benadryl or CVS tablet.</p>	
Summary Statement I learned that Benadryl tablets dissolve faster than other forms and brands of diphenhydramine and thus offer the fastest relief for allergy symptoms.	
Help Received My parents, Ms. Margeson, Mrs. Hoffmann, and Mrs. Benedict	