



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Kelli M. Muirheid	Project Number J1320
Project Title Is Punica granatum an Effective Antibacterial against Escherichia coli?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine if punica granatum (pomegranate) has antibacterial properties versus E. coli. I believe that it will, based on the medicinal use of punica granatum in ancient cultures for treating gastrointestinal and urinary tract infections.</p> <p>Methods/Materials Five sterile petri dishes, each marked into quadrants, were inoculated with E. coli. Using aseptic technique, sterile filter disks were saturated with one of four pomegranate treatments: rind (R), juice (J), pulp (P), or seed (S). A disk from each treatment was placed in the corresponding quadrant of each of five petri dishes. The control, a disk treated only with sterile water, was placed in the center of each dish. Incubation was at 37C, with observations at 12, 24, and 36 hours.</p> <p>Results Observable, consistent staining of the agar occurred among all treatments in all samples. For example, all of the pulp (P) discoloration was similar in size, color, and pattern. However, there was NO measurable zone of inhibition for any of the treatments against the E coli.</p> <p>Conclusions/Discussion The observed discoloration of the agar was likely due to the acidity of the treatments. Of significance is that punica granatum demonstrated no antibacterial properties versus E coli, which disproved my hypothesis. I used a fresh, ripe, unblemished pomegranate as the source for all treatments. A direction for future research may be to study unripe or overripe (fermented) fruit vs. E coli.</p>	
Summary Statement The rind, juice, pulp, and seed of the pomegranate is tested as to its effectiveness vs. E coli.	
Help Received Mr. K from Fresno State provided most of the supplies; St. Agnes Hospital provided the agar dishes; my mother helped obtain the supplies and chaperoned me; my father helped with the digital photos.	