



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

<b>Name(s)</b> <b>Serene Hayyeh; Sumaya Nagy</b>	<b>Project Number</b> <b>J1213</b>
<b>Project Title</b> <b>Chili Plaster Pain Relief</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> Nowadays consumers are buying organic materials rather than synthetic chemicals. We are aiming to relieve common pains such as arthritis, back pain, muscle pain, and gout pain using natural remedies. A compound mixture containing chili powder without any chemicals added will be used as a topical pain relieve to alleviate the pain without resorting to synthetic chemicals.</p> <p><b>Methods</b> In this research, we investigated if the capsaicin in chili powder can be used as a form of a natural topical pain reliever. Our independent variable was capsaicin paste application. The dependent variable was to measure the healing/pain relieving effect of the paste and the amount of time it took to relieve the pain. The Controlled Variable was to test on the same body part, amount of time to measure effectiveness, and amount of paste. We made a compound mixture containing chili powder capsaicin without any chemicals added. We also made a compound mixture with the same color and without capsaicin to act as a placebo. We predicted that the capsaicin mixture will act as a natural pain reliever on patients suffering from joint pain. We tested ten participants twice, once with the capsaicin cream, and another with the placebo. We tested both mixtures on the forehead first to make sure the subject did not develop an allergic reaction.</p> <p><b>Results</b> After testing both mixtures; the one with the active ingredient capsaicin, and the placebo, results showed that most subjects felt considerable pain relief after the capsaicin ointment than they did with the placebo. 70% of the subjects tested had a lower pain scale by the end of the hour with the paste that had the active ingredient. 30% of the subjects reported a lower pain scale after the one hour with the placebo. Most of the subjects remarked that they would rather use a natural pain relief than a chemical one.</p> <p><b>Conclusions</b> Results supported our hypothesis by showing that most subjects felt considerable pain relief after the capsaicin ointment than they did with the placebo. Using the chili plaster nowadays is becoming more economical to consumers. It is made of organic ingredients and it does not have any side effects. If you are looking for natural alternatives to topical pain relievers, then chili plaster is inexpensive and easily available. If we were to follow up on this project, we would like to test the medicinal effects of other natural ingredients as topical pain relievers, like turmeric and chamomile.</p>	
<b>Summary Statement</b> Our project is about finding natural alternatives to topical pain relief using capsaicin for patients with arthritis.	
<b>Help Received</b> People whom we could not have done this project without are our mothers, Maha Yasin and Fatima Nagy for guiding us and providing us with the materials needed, and our science teacher Rula Alshaneh for guiding us and helping us through out the project.	