



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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| Name(s) So Hyun Park | Project Number S1718 |
| Project Title Anti-Bacterial Effect of Korean Traditional Food, Kimchi | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The initial idea was to determine the reasons for Korea to have the strictly low rate of flu affects such as SARS, AI, and SI compare to other countries such as the United States or China. Koreans have unique eating habit and food such as kimchi or pepper paste. Since examining virus is too complicated and dangerous to treat directly, it was decided to focus on bacteria, which is more common and easier to treat than virus.</p> <p>Methods/Materials 1)prepare nine kinds of mixtures of garlic, ginger, and red pepper with H2O. Put test papers on those mixtures and move those papers on agar plates. Put those agar plates in the incubator and incubate. 2)grind garlic, red pepper, and ginger, and squeeze to make 100% juice. By adding water, make juice of 0% through 100%. Put 100 microliter of e-coli in the juice, and put all of those juice containers in water bath. After that, smear each juice(+E-coli) on Agar plates. Put those agar plate in the incubator and incubate. 3) Everything is same as 2) except I boiled the materials.</p> <p>Results Ex 1)for the ingredients that are not mixed, garlic has the largest clear zone. Meanwhile, red pepper powder and ginger powder has no anti-bacterial effect. There is nothing better about the mixture of the ingredient than the single ones each. Ex 2) Comparing with the control, all three of the ingredients have anti-bacterial effect, from those three; garlic is the most effective anti-bacterial ingredient. Ex 3) both raw and boiled ingredients have anti-bacterial effect compare to the control. However, in the case of garlic, raw ingredients were much more effective than boiled ingredient. However for the red pepper case, both raw and boiled ingredients had similar effect, but raw ingredient was still more effective.</p> <p>Conclusions/Discussion 1) each of them individually had anti-bacterial effects, but no effect when they were mixed. But I was able to confirm they have anti-bacterial effect. 2)For the concentration, anti-bacterial effects on garlic and red pepper depended on concentration. Although ginger was not depends on concentration, I could be able to see that ginger itself has the anti-bacterial effect. 3)For the heat treatment, ginger and garlic had better anti-bacterial effects on raw materials, and red</p> | |
| Summary Statement This is the experiment of confirming the anti-bacterial effects of three representative ingredients of Kimchi, which are garlic, ginger, and red pepper. | |
| Help Received Used incubator and clean bench from science academy under the supervision of the teacher. | |