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Since ancient times, people have observed the problem of oxidative rancidity in fatty foods. The use of chemical antioxidants, such as BHA, did not develop until the 1940's. However, few have explored the possibility of using natural antioxidants as an effective method to combat oxidation, especially in oil. Studies have shown that garlic is among the top five vegetables in antioxidant capacity. Our experiment tests for the effectiveness of natural antioxidants in soybean oil as a possible alternative to chemical antioxidants. If the oil with garlic is the slowest at developing rancidity in comparison with our other samples, then we can conclude that garlic is a potential additive in preventing oil spoilage. Iron sulfate is a pro-oxidant, a substance that catalyzes oxidation. In higher concentrations, there is a greater availability of antioxidants, which can react with existing free radicals and therefore prevent them from propagating additional free radicals.

�**Problem**

Which natural antioxidant will be the most effective at delaying oxidation, and therefore, the onset of rancidity in soybean oil? Will medium amounts of antioxidant in oil be more effective than either high or low amounts at delaying oxidation?

**Hypothesis**

Garlic will be the most effective at preventing rancidity of soybean oil, and the pro-oxidant iron sulfate will have negative antioxidant effects. Also, a medium concentration of about 0.5% antioxidant will be the most effective in oil.

If garlic is an effective antioxidant, then when set in soybean oil it will be most effective at retarding rancidity. If iron sulfate is a pro-oxidant, then iron sulfate will not show this effect of delaying oxidation. If great amounts of antioxidant in oil can actually have adverse effects and cause it to become a prooxidant, then medium concentrations will be more effective than either high or low concentrations of antioxidants in oil.

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