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優勝作品專輯

作品編號 **090020**

參展科別 醫學與健康科學

作品名稱 **Ancient Medicine- Modern Approach**

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國　　家 **Canada**

就讀學校 **College Heights Secondary**

作者姓名 **Emily O'Reilly**

Abstract of Project
Taiwan International Science Fair 2015

Project No.: 090020

Category: Medicine and Health
Title: Ancient Knowledge-Modern Approach
Name: Emily O'Reilly
Country: Canada

Purpose of the Research

The apricot kernel is believed to have a great medicinal value in many cultures. However, literature and research indicates that this belief still remains extremely controversial and conclusions regarding the medicinal value are ambiguous due to the presence of cyanide in the kernel.

The focus of this research was to evaluate two objectives through the use of several integrated technologies and modified methods: (a) To successfully remove the cyanide from the apricot kernel using an adapted method; (b) To determine the effects of the cyanide free apricot kernel extracts on *Helicobacter pylori* and *Streptococcus pyogenes* bacteria.

Procedures

The apricot kernels were removed from the pits and then ground using a food processor. The kernels were then tested for cyanide using a cyanide test kit and Cyantesmo test tape. These tests indicated that cyanide was present. A novel approach was devised to remove the cyanide and when retested, the kernels tested negative for cyanide. This result was confirmed with Infrared Spectroscopy. The cyanide free kernels were then extracted using a Soxhlet Extractor with methanol for 24 hours. In addition to the methanol extraction, three other techniques were used to obtain kernel extracts: (a) Celite filtration, (b) Infusion Method A, (c) Infusion Method B. The Kirby Bauer method was modified for the microbiology aspect of this project. The *Helicobacter pylori* and *Streptococcus pyogenes* bacteria were plated using a 0.5 McFarland Standard. Paper filter discs containing 20µL of each extract were placed onto the inoculated plates in replicates of nine. After 48 hours of incubation, the zones of inhibition were read for each plate.

Data

The results were extremely encouraging and therefore to ensure the accuracy and preciseness of the data collected, four statistical analyses were completed. These include Confidence Intervals (CI), Standard Deviation (STDEV), T-Tests, and Chi Tests. The methanol extract was significantly different from the control in all trials. The Chi test also yielded a Chi Square value of 223, which was significantly greater than the critical value of 15.507, indicating that the results observed were not due to coincidence.

Conclusion

Literature evidence has indicated that the apricot kernel has been and is still used for medicinal purposes. Studies have shown that the presence of cyanide and the risks associated with this compound outweigh any benefits gained from the kernel. It has also been suggested that previous bacterial testing resulting in positive inhibition may have been due to the presence of cyanide. However, in this study, I was able to remove the cyanide through an innovative method to prove that the biological activity observed was highly unlikely to be due to cyanide. This indicates that there are other compound(s) in the apricot kernel that have specific antibacterial properties. The potential to improve the quality of life through the application of the apricot kernel appears to be supported, and further studies justified at this time.

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This project is quite innovation and the method to take out cyanide from the product is quite valuable. Data have indieate the approach is effective in treating H-pyrote.