How Does the Level of Pungency from Pepper Extract of the Solanaceae Family Affect the Rate of Growth of Bacterial Colonies?

Gronda, Malena (School: American School of Madrid)
Pantin, Marta (School: American School of Madrid)

Clostridium difficile is an anaerobic gram positive gastrointestinal bacterium. Existing treatments for C. difficile, such as antibiotics, have not proven to be highly effective because of the rise of antibiotic resistance. There is an immediate need for novel therapeutic approaches. To determine the efficacy of capsaicin against bacteria, the process of cultivating bacteria in agar plates and applying different pepper treatments was used. The standard nutrient agar plate method provided a hospitable environment for the bacteria to be cultivated. Unknown bacteria were collected from the surface of door handles in a school environment. Subsequently, the petri dishes were swabbed with unknown bacteria with a crude liquid extract derived from one of the four chosen peppers. The peppers ranged in classification on the Scoville Heat Units Scale (SHU) from 100 SHU to 350,000 SHU. The pepper extracts were applied with a sterile swab on each petri dish three times to ensure maximum coverage. Three days after, counts of bacterial colonies were taken. The control had the greatest number of bacterial colonies, whereas the Habanero had significantly lower rates of growth. These results prove there is an inverse relationship: as the Scoville Heat Units increase, the number of bacterial colonies decrease. The tight standard deviations indicate the reliability of the data. Ethnopharmacologists are currently searching around the world to implement plants into medicine, however the use of plants in treatments for antimicrobials are rare. Thus, more detailed studies of the antimicrobial effects of capsaicin need to be conducted.

Awards Won: