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Eradication of Antibiotic – Resistant *E. coli*, *S. aureus*, *K. pneumoniae*, *S. pneumoniae*, *A. baumannii*, and *P. aeruginosa* with Chlorine Dioxide In Vitro**Agnieszka Kotzé**

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Bacterial Antibiotic Resistance (AMR) is a problem in all regions, with six pathogens accounting for 73.4% of deaths attributable to bacterial AMR, namely *Escherichia coli* (*E. coli*), *Staphylococcus aureus* (*S. aureus*), *Klebsiella pneumoniae* (*K. pneumoniae*), *Streptococcus pneumoniae* (*S. pneumoniae*), *Acinetobacter baumannii* (*A. baumannii*), and *Pseudomonas aeruginosa* (*P. aeruginosa*). The World Health Organization instigated a Global Action Plan on AMR in 2021, which is still active - healthcare costs for AMR run into many billions of dollars worldwide. A Review on Antimicrobial Resistance commissioned by the British Government argued that AMR could kill 10 million people per year by 2050 and has emerged as one of the greatest public health threats of the 21st century. Just one AMR pathogen, Methicillin-Resistant *Staphylococcus aureus* (MRSA), caused more than 100,000 deaths worldwide, with the other four pathogens covered in this research causing as many deaths again. This research has focused on studying chlorine dioxide's effectiveness in eradicating five different AMR bacteria in vitro as a novel and effective treatment. This study used different chlorine dioxide concentrations with five antibiotic-resistant bacteria, ranging from 1 – 7 ppm concentrations. Disinfection studies were compared to controls, and the results demonstrated a greater than 95% disinfection with concentrations of 7 ppm. Chlorine dioxide is a size-selective antimicrobial agent that can kill micron-sized organisms rapidly but will not cause actual harm to much larger organisms like animals or humans as it cannot penetrate deeply into their living tissues. It is safe when used in low concentrations for short durations. Clinical trials must be undertaken to gain experience in the best dosages and protocols to eradicate antibiotic-resistant microorganisms from the body.

Biography

Dr. Agnieszka (Aggie) Kotze is a Doctor of Naturopathy & Holistic Medicine and works as a consultant. Having experience in various fields and holding several degrees and certifications ranging from Biology, Business and Leadership, Health and Safety, Industrial Hygiene, and Naturopathy & Holistic Medicine. She has had the privilege to work with people from various cultures across the globe in various fields. Born in Poland and has lived in several countries including Poland, Austria, South Africa, the United Kingdom, and the Kingdom of Saudi Arabia which have enriched my life. Her journey started on a different career path, which she also loved but had the opportunity to follow her passion. Therefore, decided to study and practice Naturopathy and Holistic Medicine, which has been a blessing.