ANTAGONISTIC ACTIVITIES OF KEFIRGEL AND KERFIRGEL PRODUCTS AGAINST STAPHYLOCOCCUS AUREUS ISOLATED FROM DIABETIC FOOT ULCERS

Soraia Zenão¹; Alfredo Aires²; Carla Dias³; Maria José Saavedra³; Conceição Fernandes¹

¹Mountain Research Centre (CIMO), ESA–Polytechnic Institute of Bragança, Bragança, Portugal;
²CITAB–Centre for the Research and Technology of Agro–Environmental and Biological Sciences, Agronomy Department, University of Trás-os–Montes e Alto Douro, P.O. Box 1013, 5001–801 Vila Real, Portugal;
³CECAV–Veterinary and Animal Science Research Center, Veterinary Science Department, University of Trás–os–Montes e Alto Douro, P.O.Box 1013, 5001–801 Vila Real, Portugal

Diabetic foot ulcers are often complicated by infection and among pathogens the Gram–positive Staphylococcus aureus is the most common isolated. Also concomitantly, the high prevalence of methicillin–resistant S. aureus (MRSA) was significant impact on successful treatment of infected foot ulcers. In this context, the purpose of the present study was to evaluate the antibacterial properties of Kefigel®, a natural product composed by nettle (Urtica dioica L), lavender (Lavandula angustifolia Mill) and kefir grains, which have been reported as to having antibacterial activity against several diseases. Here, antibacterial effect of Kefigel® and its components were investigated against 20 S. aureus isolates (10 MSSA and 10 MRSA) collected from several diabetic foot ulcers. To assess antibacterial activity, the disk diffusion assay method, minimum inhibitory concentration (MIC), minimal bacterial activity and effects on specific growth rate, were applied. Results showed that by diffusion method, only etanolic extracts of nettle and lavender showed antibacterial activity and their effects were mainly bacteriostatic. Compared to the antibiotic gentamicin, the nettle and lavender extracts showed an efficacy between 50 and 100% relative to the antibiotic. Generally, the MRSA isolates sowed higher inhibition halos comparing MSSA isolates. In turns, Kefigel® (40mg.mL⁻¹) affects the specific growth rate of S. aureus isolates, since after incubation for 9h almost MSSA isolates growth were inhibited. A bactericide effect was observed only against one isolates MRSA. These findings indicate a potential use of Kefigel® as a natural product having an effective effect against Staphylococcus aureus. The topical use of this product for prevention of diabetic foot ulcers infections can be useful, however further investigation will be made, namely tests with high Kefigel® concentrations and synergetic effects with antibiotics.