Use of the medicinal synthetic aluminum-magnesium silicate to enhance efficacy of antimicrobials, for prevention and treatment of resistant infections

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Development of resistance against drugs, by micro-organisms, has become a global medical challenge, both in veterinary medicine and in human practice. Antimicrobials, affected and those that can be affected, number in several thousands. To avoid drug-resistance, medications should clear, at least, 95% of infections-loads. When more than 5% of infections'-load is left after treatment, immune responses often fail to complete termination of such infections and infections that survive treatments, most times, develop resistance against drugs used for the treatment. To minimize side effects of drugs, lower doses (75%) of antimicrobials (Piparazine, Ampicillin, Chloroquine and Sulphadimidine) were used; to prolong bioavailability of the drugs in order to enhance their efficacy, they were stabilized with the Medicinal synthetic Aluminum-magnesium silicate (MSAMS) \( \text{Al}_4(\text{SiO}_4)_3 + 3\text{Mg}_2\text{SiO}_4 \rightarrow 2\text{Al}_2\text{Mg}_3(\text{SiO}_4)_3 \) and to maximize immune responses of treated animals, the treatments were supported with immune stimulants. Recommended doses (100%) of Piparazine, Ampicillin and Chloroquine, when not stabilized with the MSAMS, cleared only 82.94%, 80.68% and 20% of *Helignosomoides bakeri*, *Salmonella gallinarum* and *Plasmodium berghei* infections. The 75% of doses of the MSAMS-stabilized Piparazine and the MSAMS-stabilized Ampicillin, cleared 96.82% and 97.84% of the respective infections. Supporting the lower doses of MSAMS-stabilized Chloroquine and MSAMS-stabilized Ampicillin with immune stimulants led to 100% clearance of *P. berghei* infection and 95.80% clearance of Ampicillin-resistant *Escherichia coli* infection. It has therefore been concluded that enhancing efficacy of antimicrobials by prolonging their bioavailability with the MSAMS; minimizing side effects of drugs by using 75% of doses of MSAMS-stabilized antimicrobials for treatments and maximizing immune responses of patients by supportive treatment with immune stimulants, achieve enough clearance (≥95%) of infections so that drug-resistance is prevented and drugs made to regain effects against resistant infections. By making 75% of doses of the drugs more effective than the 100%, the MSAMS also reduces cost of drug formulations.

Biography

Maduike C O Ezeibe is a Professor of Veterinary Medicine in the Department of Veterinary Medicine, Michael Okpara University of Agriculture, Umudike-Nigeria. He holds DVM, MSc and PhD degrees from University of Nigeria, Nsukka. He is also a fellow of College of Veterinary Surgeons, Nigeria (FCVSN). He invented the Medicinal synthetic Aluminum – magnesium silicate (Nanoparticles) - a broad-spectrum antiviral medicine, a highly active antiretroviral medicine, a potential anticancer agent and a stabilizing agent for antimicrobials.

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