ITEX 2021 - Silver Medal

PATENTED QVID-X SOLUTION AS ECO-FRIENDLY, NATURAL AND NON-TOXIC GERMICIDE AGENT

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CURRENT ISSUES

The COVID-19 pandemic has led to a rise in hospital-onset resistant infections such as Methicillin-resistant Staphylococcus aureus (MRSA). COVID-19 patients admitted in ICUs are coinfected with multidrug-resistant bacteria such as Acetinobacter baumannii. For the infection control, alcohol-based hand sanitisation is widely considered to be effective to reduce or eliminate bacterial/viral load.

WHO recommended alcohol based hand sanitisers which are made up of ethanol, isopropyl alcohols and hydrogen peroxides in different combinations (WHO, 2020). However, these chemicals have known toxic and hazardous impact on human health and environment when misused. It is recognised that ingestion of low concentration of hydrogen peroxide (3% solution) is responsible for minor gastrointestinal tract irritation (Moon et al., 2006) and in a few cases it is also responsible for portal vein embolism (Sung et al., 2018) and mild mucosal irritation and vomiting (ATSDR, 2014)

BRIEF TECHNOLOGY, INVENTION AND NOVELTY

Patented Qvid-X solution is a non alcoholic, natural and non toxic germicide agent which can decrease the infectivity, morbidity, and rate of mortality associated with pathogens and microorganisms. The product formulation is made from 100% food grade ingredients and thus biodegradable. The invention is a plant-based nano emulsion solution with the size less than 200nm. The operational process is green synthesis, simple and affordable. The nano delivery system improves the efficacy, stability and ease of handling.

In vitro antibacterial and antiviral study of the Qvid-X solution at the Medical Faculty of UPM has shown that it can kill hospital acquired bacteria particularly MRSA and Acinetobacter baumannii , which is a common threat to public health but with limited therapeutic options. The solution also has antiviral activity when tested on human coronavirus OC43 (HCoV-OC43) which is a beta coronavirus under the same group as the SARS-COV-2. It also exhibited good antioxidant properties and the activity is comparable to Vitamin E. The cytotoxicity test conducted on a few cell lines showed low IC_{50} values.The invention is unique which can be used as dual therapy in managing bacteria and viral infections. The product is suitable to be used as surface decontaminant in hospitals, health care services even as a household cleaning agent and also as hand sanitisers. The alcohol free and antioxidant properties of the Qvid-X solution give minimum toxicity, safer and kind to the skin. The lemon scented of the product deodorise the treated area or skin and leave it as fresh, clean and bright. This novel and natural formulation containing terpenes as active ingredient offers greater safety as a sustainable alternative, effective and lower production cost which has a high chance of turning into profitable business products

The invention is the outcome from the collaborative research between Faculty of Science and Faculty of Medicine. The team members include Dr Nur Kartinee Kassim as a project leader (Natural Product Chemist), Dr Norazlinaliza Salim (Colloid Chemist), Professor Dr Rukman Awang Hamat (Consultant Microbiologist) and Assoc. Professor Dr Chee Hui Yee (Virologist).