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EDITORIAL

Poor Quality Alcohol Based Hand Sanitizers: The Pitfall in Infection Control

Ever since the serendipitous discovery of alcohol through fermentation c. 10000 BC, the substance has attracted utility and abuse in equal measure. The initial use of alcohol as beverage in social functions, later diversified to medicinal and spiritual applications. Alcohol discovery however, cannot be traced to a single source but diverse geographical sites, although its use for beverage purposes seems universal. Distillation of fermented liquors to produce spirits dates back to c. 2000 BC in China, Egypt, and Mesopotamia for medicinal, cosmetic and spiritual purposes. The invention of the alembic as a distillation apparatus has several claims towards Arabic, Jewish, Egyptian and European origins with accompanying nomenclature.

Ancient use of alcohol for medicinal purposes and longevity whereby it was christened “spirited water", a healing elixir, is well documented. Other terminologies used in this respect include ‘aqua vitae’, or ‘eau de vie’ meaning 'water of life' with therapeutic qualities. Primeval pharmaceutical ascriptions were founded on the healing powers of spirits as well as the feeling of relaxation and wellbeing. In the mediaeval era, alcoholic fumes for anesthetic purposes during surgical procedures was described in the 16th century. Later, post-surgical intravenous ethanol was used for pain relief and relaxation. The application of alcohol in contemporary practice is however limited to antisepsis.

The legend of the contemporary alcohol based hand sanitizer (ABHS) attributes its invention to a nursing student, Lupe Hernández in 1966. The account is however, doubtful since it has not been verified, claim laid to the discovery or relevant patents recorded. Hitherto, the antimicrobial activity of alcohol was acknowledged and widely applied in surgical procedures and wound care. The pioneer gel ABHS product, Purell®, was launched in the 1990s and enjoyed market dominance in the United States of America while other brands such as Sterillium® (Germany) were marketed elsewhere. ABHS products undoubtedly saved the day during the COVID-19 pandemic when they became ubiquitous household and personal care products.

The ABHS however, have not escaped the malpractices associated with alcohol, such as the commercialization of substandard and falsified (SF) products. Such SF products typically contain less than the threshold alcohol content (60% v/v), are devoid of active ingredients or reveal substitution with non-permitted toxic alcohols (methanol). Incidentally, the raw material for the manufacture of ABHS is pharmaceutical or food grade ethanol obtained through fermentation and subsequent distillation. This presents loopholes for diversion, smuggling and pilferage of alcohol destined for ABHS production into the beverage market. Worse still, methanol intended for industrial or laboratory use may be illegally channeled into ABHS manufacture. These fraudulent acts commonly occur among unscrupulous producers and vendors whose motivation is profit-driven. Ultimately, these poor quality or adulterated products are sold to unsuspecting consumers. Additionally, some habitual spirit drinkers who desire to deploy ABHS as surrogate alcohols may suffer adverse effects. Hence, the cases of ocular toxicity often reported after consumption of ABHS adulterated with methanol.

The COVID-19 pandemic that hit the globe in March 2020, forced the public to discern the critical role of personal hygiene, though hand washing and ABHS usage, in infection control. The sudden surge in demand for ABHS, created opportunities for industrial players to produce them. Consequently, many cosmetic, pharmaceutical and chemical manufacturers repurposed their production lines for ABHS output. Concomitantly, some producers and vendors engaged in illegal production of ABHS products without due regard to good manufacturing practices (GMP), quality control and regulatory compliance. Literature

reports from Kenya, South Africa, Canada and Ethiopia attest to the existence of substandard and falsified ABHS products in the market during the COVID-19 pandemic.

In this issue of the journal, Maingi *et al.* have reported the post-pandemic quality control results of ABHS in the Nairobi metropolitan region. Interestingly, the results are comparable to a peri-pandemic study conducted previously, thus underscoring the need for sustained stringent regulation and market surveillance. Okidi *et al.* have also published results on the quality performance of ABHS products in Kampala city, Uganda. Once again, the results are very telling on the prevalence of poor quality products in the study region. These reports add impetus to the continuous efforts made by regulatory authorities to stamp out substandard and falsified products in circulation. Inevitably, a multi-pronged approach including post market surveillance, pharmacovigilance and consumer education are required to attain the desired outcomes. Essentially, the sale of substandard or falsified ABHS seriously undermines the very purpose of their use, endangers the public to the spread of infectious disease and denotes economic fraud.

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