

MEDIA RELEASE

University of Pretoria study reveals hand sanitisers in and around Tshwane to be substandard

PRETORIA – A scientist from the University of Pretoria (UP) has found that commercial, off-the-shelf hand sanitisers used by the public in and around Tshwane, Gauteng are substandard, do not contain the recommended alcohol content, and are mostly incorrectly labelled according to local and international standards.

A vast majority of the products analysed during the study found that sanitiser solutions did not contain alcohol compositions for ethanol and isopropanol, as recommended by the World Health Organisation (WHO). Most did not have the required 70% ethanol recommended by the US Centres for Disease Control and Prevention.

Hand sanitisers are seen as the first line of defence against COVID-19, and because alcohol content and concentrations are imperative for a sanitiser to have virucidal activity, these findings suggest a widespread lack of adherence to the required composition. The study's findings were published in the *South African Journal of Science*, <https://doi.org/10.17159/sajs.2021/9328> by Dr Abdullahi Ahmed Yusuf, Senior Lecturer in Entomology in UP's Department of Zoology and Entomology in the Faculty of Natural and Agricultural Sciences.

"The results from the study, which involved testing a range of readily available sanitisers in the Tshwane area for compliance with international standards, are concerning, particularly as we head into the fourth wave and rely on this non-pharmaceutical intervention for limiting the spread of the virus," Dr Yusuf said. "There are several substandard hand sanitisers out there; this is driven largely by profit. For example, because ethanol is an expensive solution, if you cut corners on 10%, that equates to more profit."

According to Dr Yusuf, government monitoring of sanitiser products is imperative, as some manufacturers have failed to spell out what they contain, which is a deviation from the local standard. Of particular concern, he noted, was the inconsistency in the amount of ethanol in these sanitisers, thus affecting their efficacy.

Dr Yusuf said that 50 products of different origins and formulations obtained off the shelf and in public places in and around Tshwane were analysed for their alcohol content using gas chromatography. "Ethanol was the most common alcohol used, followed by isopropanol. Only 21 (42%) of the products analysed contained at least 70% alcohol; of these, only 14 (28%) met the WHO's recommended 80% alcohol content to have a virucidal effect on SARS-CoV-2."

Substandard sanitisers, however, do not seem to be limited to Gauteng. Dr Yusuf stressed that, according to anecdotal evidence, the problem is countrywide. The study found that of the 41 commercial off-the-shelf products analysed, 27 (66%) contained less than 70% alcohol in comparison to 13% of homemade products. Only 18% of gel products contained 70% alcohol, compared with 47% for liquid-based products. Most of the products did not contain the appropriate or correct declaration as recommended by the South African National Standards (SANS 289 and 490).

The proliferation of substandard hand sanitisers calls for stricter regulation and enforcement to protect the public, their rights and their well-being during and after the COVID-19 pandemic period, Dr Yusuf said.

However, in the interim, “formulation of alcohol-based hand sanitisers using WHO guidelines should be mandatory. As such, when made correctly, formulations do have the required virucidal effect against SARS-CoV-2,” he added.

Ironically, homemade alcohol-based hand sanitisers conformed to a greater degree to WHO standards. “It is evident from these results that there is a need to monitor the manufacture of off-the-shelf products to ensure compliance and to assure consumers that products offer the required protection against SARS-CoV-2,” he said.

A direct rapid, reproducible gas chromatography method for the determination of alcohol composition in hand sanitisers that can be used for quality control was developed and optimised as part of the study. Most commercial alcohol-based products do not contain the required amount of alcohol to be classified as effective virucides, especially against SARS-CoV-2, the causative agent of COVID-19.

The presence of products on the market and in public places that do not qualify as alcohol-based hand sanitisers and are not appropriately labelled poses a significant risk to consumers. This is in the wake of preventative measures against COVID-19, more so because hand hygiene and disinfection remain one of the most (if not the only) effective action for mitigating the spread of the disease available at this time. “Thus, using substandard products exposes the population unknowingly to the virus by increasing the chances of transmission via contaminated surfaces,” said Dr Yusuf.

He recommended that quality control measures – especially at the manufacturing, wholesale and retail levels – need to be put in place. Added to this is the need to test alcohol-based hand sanitisers and any product sold for its virucidal effect to confirm its efficacy. “For now, in the absence of appropriate quality control measures, preparing alcohol-based hand sanitisers using the WHO’s guide for local formulations remains a better alternative to purchasing off-the-shelf products that are primarily substandard.”

Media enquiries

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ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on the Hatfield Campus, Pretoria. This 113-year-old institution is also the largest producer of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the Gordon Institute of Business Science (GIBS). It is the only University in the country with a Faculty of Veterinary Science, which is ranked top in Africa. UP has 120 academic departments and 92 centres and institutes, accommodating more than 55 000 students and offering about 1 100 study programmes.

UP is one of the top five universities in South Africa, according to the 2019-2020 rankings by the Center for World University Rankings. The QS World University Rankings also placed UP among the top 100 universities worldwide in three fields of study (veterinary science, theology and law), and UP is in the top 1% in eight fields of study (agricultural sciences, clinical medicine, engineering, environment/ecology, immunology, microbiology, plant and animal sciences and social sciences), according to the Web of Science Essential Indicators.

In May 2020, the annual UK Financial Times Executive Education Rankings again ranked GIBS as the top South African and African business school. The University also has an extensive community engagement programme with approximately 33,000 students involved in community upliftment. Furthermore, UP is building

considerable capacities and strengths for the Fourth Industrial Revolution by preparing students for the world beyond University and offering work-readiness and entrepreneurship training.

As one of South Africa's research-intensive universities, UP launched the Future Africa Campus in March 2019 as a hub for inter- and transdisciplinary research networks within UP and the global research community to maximise 4IR innovation and address the challenges and stresses our continent and world is facing. In addition, UP also launched the Javett Art Centre in September 2019 as a driver of transdisciplinary research development between the Humanities and other faculties. In November 2020 UP launched Engineering 4.0. as a hub not only for Smart Cities and Transport, but also to link the vast resources in technology and data sciences to other faculties via Future Africa. These initiatives are stimulating new thinking at the frontier of 'science for transformation'.

For more information, go to www.up.ac.za