



Nano based anti-Malaria drug development

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Abstract:

Malaria is one of the world's deadliest infectious diseases. Each year over 2 million people are infected and around half a million die. Sadly over 90% of deaths occur in sub-Saharan Africa where on average a child dies of malaria every 12 seconds. Currently there is no effective vaccine against malaria. The earliest drug was Quinine, which was discovered in 1820, but due to severe side effects it has lost its popularity. Its successor chloroquine was very potent has been withdrawn as the malaria parasite has acquired resistance. Presently, Artemisia, a herbal-based compound is the only potent treatment. However, resistance has already been reported in Cambodia and Southern Asia.

In summary all Antimalarials drugs available today are challenged by poor oral bioavailability, short half-lives and toxicity, hence the urgency to find solutions to resolve these shortcomings as well as developing new drugs.

Nanomedicine has revolutionized medicine due to its ability to improve the bioavailability of these compounds by increase solubility, reducing toxicity and improve dose and dose frequency. This technology will enhance research towards the development of novel antimalarial drugs from both potent isolated herbal compounds as well as the existing drugs which needs optimization.

My research will be looking into various methods of encapsulating anti malaria active compounds into nanocarriers which are able to cross all biological barrier due to their nano size. Using these nanocarrier we can also target the infected red blood cells and deliver Malaria drugs directly. This will improve the bioavailability immensely

The Nanomedicine will create opportunities to innovate and commercialize new malarial drugs and improve the



potency exiting once- an aspect that is long overdue in the region. This will save millions of lives in sub-Saharan Africa and the world at large.

Biography:

Hulda Shaidi Swai is a Nanotechnology Scientist, holds a phd in Biomaterials, from Queen Mary's College, University of London, UK where she also worked as a Researcher for 9 years. In May 2018, Prof. Swai was appointed the President of the African Materials Research Society (AMRS) and in 2013 she was appointed as an Extra ordinary Professor in University of Pretoria. In 2015, Prof. Swai joined NM-AIST and managed to acquire funds from the World Bank for establishment of a newly formed "African Centre for Research, agricultural Advancement, Teaching Excellence and Sustainability" (CREATES) in Food and Nutritional Security in Africa which was established at the NM-AIST through the World Bank's African Centers of Excellence (ACE II) initiative.

Publication of speakers:

1. A computational study on the role of water and conformational fluctuations in Hsp90 in response to inhibitors.
2. International Journal of Computing and Digital Systems Review of Agricultural and Rural Development System Models and Frameworks to Support Farming as a Business via Benchmarking: The Case of Tanzania.
3. Spray-Dried, Nanoencapsulated, Multi-Drug Anti-Tuberculosis Therapy Aimed at Once Weekly Administration for the Duration of Treatment.

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