

Inventor(s):

Scott Williams, PhD., Rochester Institute of Technology
Daniel Heglund, PhD., South Dakota School of Mines and Technology
Neal Hodges II, South Dakota School of Mines and Technology

Executive Summary:

CAMM is a colorimetric test that indicates the presence and dose of multiple malaria medications. It is simple to use, fast (minutes) and low cost (cents per test).

Technology Description:

Plasmodium falciparum (malaria) infects between 200 and 500 million people per year worldwide. Nearly one million deaths per year occur, mostly in children under five. Fortunately, there is an effective therapy that is successful at treating the disease. Unfortunately, there are up to 70% counterfeit medications delivered to patient. The counterfeit manufacturers duplicate the pills to exacting color, shape, size, demarcation, blister packaging, etc. There are many other common counterfeits that need to have simple means to establish their authenticity. In western European countries consumers spent \$14 billion (USD) on counterfeit medications. Worldwide, counterfeit medications sold are worth \$75 billion (USD). The illicitly-sourced drugs include erectile dysfunction, weight loss, influenza and many more. Thus, there is an immediate need to develop technologies and methods for authenticating malaria and other counterfeit medications.

This invention relates to methods for authenticating medications and/or quantifying the active ingredients for malaria medications. Our testing methods have many advantages over existing technology. For example, our testing methods provide unmistakably clear results that can be implemented and interpreted without special training, anywhere in the world. Further, our testing methods offer both quantitative and qualitative results. The methods yield different colors where the actual color indicates the presence of the active ingredient, and the intensity of the color indicates the concentration of the active ingredient. The testing methods are very inexpensive to produce, manufacture, and employ. They are simple chemical test that requires no power, batteries, or equipment of any sort.

Keywords: Drug Quality Assurance, Artemisinin, Counterfeit Medication and Malaria Medication

Technology Readiness:

Chemical testing methods have been developed for all four (4) of the Artemisinin class medications. We have completed limited testing of the chemical testing kits, and these kits are ready for an Alpha Version Trial.

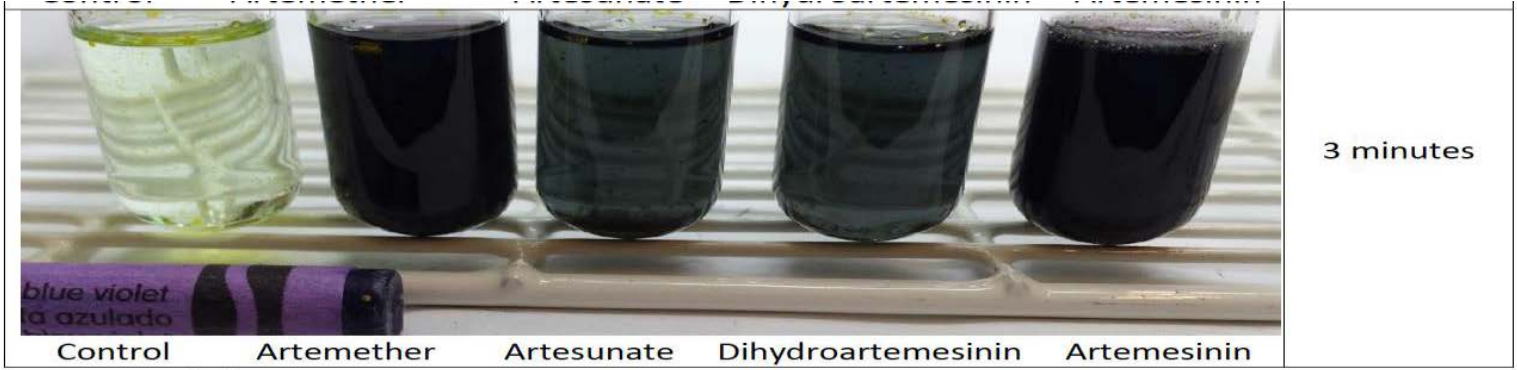
Intellectual Property (IP):

This technology is the subject of a pending U.S. patent application.

Applications:

Our method employs colorimetric chemical reaction for examining both the quality and quantity of active sesquiterpene lactone ingredients in antimalarial medications, including artemisinin, artesunate, artemether, and dihydroartemisinin. We employ a reagent for reacting with the medication in a solution-based reaction system. The medication can be in any form, e.g., injectable liquid, orally administered liquid, gel cap, pill, etc. Our novel reagent system is intended to react with sesquiterpene lactone derivatives, which are commonly an active ingredient in antimalarial medications. We discovered that a highly specific reaction occurs between our invented reagent and malaria medication derivatives resulting in unmistakable color change in both hue and intensity. Thus, the present invention is designed to provide a negative result (i.e., no color change) to counterfeit medicines.

These counterfeits can be any chemical agent that has a physical appearance similar to the active malaria drug, but has no pharmaceutical activity toward the disease. Counterfeit agent examples include, but are not limited to, aspirin, acetaminophen, NSAIDs, vitamins, starch, cellulose, and other inert powdered agents.



Target Customers:

- Non-Government Organizations
- Pharmaceutical Companies
- Government Institutions
- Medical Pharmacies

Licensing Opportunities

South Dakota School of Mines Office of Economic Development is actively seeking exclusive and/or nonexclusive licensing opportunities. Joint development opportunities are also available.

Contact

Joseph Wright, Associate V.P. for Research, Office of Economic Development at SD Mines , 605-394-1205 (office) or Joseph.wright@sdsmt.edu