Green Chemistry Synthesis of The Malaria Drug Amodiaquine

Howard University researchers have developed facile/safe methods for the development of Amodiaquine and its analogs.

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Benefits/Features:
- One day synthesis vs. five days.
- Lower environmental impact.
- Inexpensive.
- Increased yield to greater than 90% as compared to 60-65%.

Potential Commercial Application:
In the treatment of *Plasmodium falciparum* avoiding the development of drug resistance.

Stage of Development:
- Patent Application filed.
- Approved for human use.

Status:
Seeking a commercialization and licensing partner.

Background:

Malaria is a mosquito-borne infectious disease transmitted by the bite of an infected Anopheles mosquito. The disease is caused by a parasite, which is transmitted from the mosquito to human red blood cells. People infected suffer from high fever, chills, anemia, bloody stools, jaundice, nausea, vomiting and sweating. Malaria is widespread in tropical and subtropical regions, including much of Sub-Saharan Africa, Asia, and the Americas. Deaths from malaria in sub-Saharan Africa occur predominately (over 90%) in infants, children, and pregnant women.

Amodiaquine was first used for malaria back in 1948. It acquired a renewed value upon its approval for use with artesunate as an artemisinin combination therapy (ACT), recommended by the World Health Organization (WHO) for the treatment of uncomplicated malaria.

Description of Technology:

Compared to the current, more complex process for the synthesis of amodiaquine, the current invention describes the synthesis of amodiaquine and its analogs in a simpler process, occurring in a single reaction vessel, and completed in one day. This method eliminates expensive and environmentally hazardous solvents from the reaction, therefore, reducing the amount of undesirable byproducts and impurities. In contrast, the current, conventional method of synthesizing amodiaquine and its analogs consists is a three to four step method, which takes up to five days to complete. Financially, the described invention proves to be cost effective as there are decreased labor costs and minor commercial plant and equipment investments. The current invention also produces less waste and requires less solvents and reagents. Product yields are increased and yields greater than 90% are obtainable.

Opportunity:

The green chemistry synthesis of amodiaquine is the subject of a patent application. Seeking a licensing and commercialization partner for the current technology. Dr. Fortunak is available to elaborate on the synthesis of the drug under a NDA.