Production of Dihydroartemisinin for the Treatment of Malaria.

The University of Warwick has available for licence intellectual property, including inventions subject to a patent application, on improved procedures for the manufacture of dihydroartemisinin (DHA). The novel methodology uses the technology of continuous flow for the reduction of the artemisinin (harvested from Artemisia annua) to active compound DHA which is also the basis for the manufacture of other therapeutic malaria agents (e.g. Arteether, Artemether and Artesunate).

BACKGROUND

According to the World Health Organisation’s (WHO) Roll Back Malaria initiative half of the world’s population are at risk of malaria. In 2010, there were approximately 219 million malaria cases and an estimated 660,000 malaria deaths. People living in the poorest countries are the most vulnerable: in 2010 91% of all malaria deaths occurred in Africa, mostly among the under-fives.

Threat of parasite resistance to antimalarial medications is of significant concern. WHO-led strategies to curb Plasmodium falciparum resistance include treatment, facilitated by diagnostic testing, in confirmed cases only and the use of combination therapies. Improved product performance is also essential. While a multifaceted approach will be required, the novel production processes developed at the University of Warwick could significantly contribute to improved therapeutics as part of the global malaria strategy.

INVENTION

Using a continuous flow methodology improvement in the quality and the quantity of DHA produced has been achieved. The novel approach appears to be both more economical and ecological. It is anticipated that this new process could have significant implications for the improved production of DHA and DHA-based active pharmaceutical ingredients.

We believe the protocol and apparatus advancements, for the derivatisation of artemisinin into DHA, will be of keen interest to artemisinin extraction and pharmaceutical companies, as well as organisations promoting and financing the fight against malaria. Recent results also include know-how developed in the large-scale preparation of DHA and subsequent reactions involved in antimalarial agent production.

Key benefits of the technology and knowledge include:

- Higher quality and more consistent DHA production
- Increased efficiency and yields
- Need only for ambient temperature
- Significant reduction in reaction time
- Continuous flow rather than batch production protocols and apparatus
  - Removes many of the issues associated with synthetic scale-up
  - Reduced risk of batch failure
  - Large-scale continuous flow methodology
- Option of environmentally friendly solvents
- High level of reaction control with intermediate-free, single-step process

PATENT & PUBLICATION

The following patent application and the associated intellectual property are available for licence through Warwick Ventures Ltd.


CONTACT

Warwick Ventures is interested in pursuing discussions with commercial, governmental or not-for-profit parties interested in advancing this scientific development technologically or financially, in order to ameliorate current issues associated with the production of DHA-based antimalarial therapeutics.

Further information is available on request from:
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