

# Proteomics discovers link between muscle damage and cerebral malaria

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Malaria-related complications remain a major cause of death for children in many parts of the world. Why some children develop these complications while others don't is still not understood.

A multidisciplinary group of scientists and [clinicians](#) under the direction of Peter Nilsson (SciLifeLab and KTH, Sweden), Mats Wahlgren (Karolinska Institutet, Sweden), Delmiro Fernandez-Reyes (Brighton & Sussex Medical School, UK) and Olugbemiro Sodeinde (College of Medicine, University of Ibadan, Nigeria), report results of a systematic proteomics approach to the question in *PLOS Pathogens*. They compared proteins in the blood of uninfected children with those in the blood of infected ones, and also proteins in blood from children with different severe malaria syndromes with proteins in blood from uncomplicated cases.

The researchers analyzed over 1000 proteins in more than 700 children. To make the study more rigorous, the samples were divided into "discovery" and "verification" sets, and only associations that were found in both were reported. There were 41 proteins that could distinguish between malaria patients and uninfected children from the same community. Most of these were components of the inflammatory response.

The researchers also found proteins that were specific to the two most deadly complicated malaria syndromes in children, namely severe malaria anemia and [cerebral malaria](#). For both, combinations of proteins,

so-called "signatures", could identify the specific syndrome with high accuracy.

For cerebral malaria, the researchers found that a group of muscle-specific proteins was present in the [children](#)'s blood, suggesting that muscle cells are damaged. At least some of that damage might be associated with coma, which occurs in cerebral malaria but also in other diseases like meningitis.

The researchers conclude that their study could "provide key elements toward the discovery of distinct mechanisms in the human response to malaria infection between the two most fatal syndromes of childhood malaria" and that muscle-specific proteins in plasma might be "potential indicators of cerebral [malaria](#)".

**More information:** Bachmann J, Burté F, Pramana S, Conte I, Brown BJ, et al. (2014) Affinity Proteomics Reveals Elevated Muscle Proteins in Plasma of Children with Cerebral Malaria. PLoS Pathog 10(4): e1004038. [DOI: 10.1371/journal.ppat.1004038](https://doi.org/10.1371/journal.ppat.1004038)

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