Detection of *Plasmodium falciparum* gametocytes by quantitative buffy coat analysis

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We have repeatedly demonstrated a significant correlation between gametocyte density and mosquito infection. However, blood from gametocyte carriers does not always seem to be infective for *Anopheles gambiae* and feeds on thick-smear-negative blood may sometimes result in oocysts. Some blood samples giving negative thick smears are obviously from subjects with low gametocytaemias. To see if the number of such false-negatives could be reduced, the sensitivity of the commercial quantitative buffy coat (QBC) technique (Becton Dickinson), in which acridine-orange coated capillaries are used, was compared with that of thick smears.

A blood sample was taken from each of 177 patients with malaria-like complaints attending a dispensary in Cameroon. Gametocytes were found in 22 cases using QBC-capillaries but only five of these and no others gave positive thick smears. Those samples positive by both methods were those that had more than seven gametocytes/capillary; those positive by QBC and negative by thick smear gave less than seven gametocytes/capillary.

The gametocytes in the QBC capillaries were found in the mononuclear cell layer and not in the upper erythrocyte or granulocyte layers. Neither the gametocytes in the blood samples nor these from *P. falciparum* cultures fluoresced brightly. They were, however, easily recognisable by their crescentic shape and pigment, even under normal light. It was not, therefore, fluorescence that gave the QBC tests higher sensitivity than the thick smears but simply the larger volume of examined blood [50 µl *v.* 0·25 µl (300 leucocytes)] and the concentration of the gametocytes. Falciparum gametocytes retain their crescentic shape in QBC capillaries, making the technique suitable for rapid identification of low-density gametocyte carriers.

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