



ABSTRACTS OF RECENT CHINESE PUBLICATIONS

191. Cheng, Q. et al. Concentration and isolation of schizonts and merozoites of Plasmodium yoelii yoelii. Journal of Parasitology and Parasitic Diseases, 1985, 3(2): 125-127 (In Chinese, with English abstract)

Relatively pure preparations of schizonts and merozoites are required for studying the antigenicity of different stages of the malaria parasite. Several methods of concentrating parasitized erythrocytes as well as of isolating merozoites were compared. Erythrocytes parasitized with schizonts and large trophozoites can be obtained by placing the infected blood on top of a 17.5% Ficoll solution which is then centrifuged. The interface layer was found to contain mainly schizonts while a layer below the interface layer was rich in trophozoites. By using a Concanavalin A-Sepharose 4B column, a fairly large amount of relatively pure merozoites can be isolated, the purity of the merozoites being more than 90%, with 5.4% large trophozoites and less than 1% red blood cells.

192. Zhang, S. W. et al. Electron microscopic study on the ultrastructure of sporozoites of Plasmodium vivax "multinucleatum". Chinese Journal of Infectious Diseases, 1984, 2(2): 119-120 (In Chinese, with English abstract)

Ultrastructure of sporozoites of Plasmodium vivax "multinucleatum" was first described in China. Under electron microscope, it was shown that there were 10 subpellicular microtubules arranged around two-thirds of the periphery of the sporozoite and a single one in the remaining one-third, i.e. 10 + 1. This finding may be related to observations by Garnham et al. (1963) who showed that Plasmodium species seemed to possess a definite number of microtubules with a special pattern of distribution.

Reference

Garnham, P. C. C., Bird, R. G. & Baker, J. R. (1963) Electron microscope studies of motile stages of malarial parasites. IV. The fine structure of the sporozoite of four species of Plasmodium. Transactions of the Royal Society of Tropical Medicine and Hygiene, 61: 58-68.

193. Xu, L. H. et al. Studies on the fine structure of Plasmodium gallinaceum sporozoites. Zoological research, 1985, 6(1): 33-36 (In Chinese, with English abstract)

Infected salivary glands of Aedes aegypti were harvested 18 days after the mosquitos had been infected with Plasmodium gallinaceum. Dissected salivary glands were fixed in 1.25% glutaraldehyde for 1 hour and postfixated in 1% osmium tetroxide for 1 hour. Following complete dehydration the glands were embedded in Spurr's low-viscosity embedding medium. Thin sections were stained with uranyl acetate and lead citrate and then examined with a Philips 300 electron microscope.

The sporozoites, elongated and sometimes curved, measured about 7 μ m in length and 0.8 μ m in diameter.

¹ The WHO/MAL series has been chosen as a vehicle for issuing abstracts or translations in English of papers on malaria published in the Chinese medical and scientific press as most of this material is not readily available to interested readers outside China. The numbering of the abstracts in this document is consecutive to that of the abstracts given in the previous WHO/MAL/85.1019.

The pellicle was composed of an outer membrane, a double inner membrane and a row of subpellicular microtubules. The outer and inner membranes measured 33 nm in width. The microtubules which measured 26 nm in diameter were readily seen in cross sections.

The rhoptries were extremely long extending from the apical end to the midportion of the sporozoite. A rhoptry measuring 0.39 μm in width was observed. Numerous, electron-dense micronemes were present not only in the anterior but also in the mid-region.

The nucleus was located in the centre. The presence of a double nuclear membrane was not confirmed.

The cytoplasm of the sporozoite consisted of a homogeneous matrix with occasional vacuoles. Inside the vacuoles were "fenestrated buttons" (possibly lipid material), 0.26-0.36 μm in diameter with clearly defined margins. Numerous ribosomes were present in the cytoplasm.

A cytostome structure measuring 33 nm in depth and 40 nm in width and laterally situated was observed in the sporozoite.

The particularly long rhoptries and numerous micronemes are probably involved in penetration of the host cell membranes, first those of cells in the salivary glands of the mosquito host and then those of mesodermal cells in the skin of the avian host. Thus, any chemical able to cause alterations in the morphology and function of rhoptries and micronemes can probably influence or even block penetration of the host cell by the sporozoite.

194. Chen, L. Report on a survey in Menglang, Lancang County, Yunnan Province, after preliminary eradication of malaria. Chinese Journal of Epidemiology, 1984, 5(6): 351-353 (In Chinese, with English abstract)

Malaria surveillance of 20 villages and one town with a total population of 18 468 was carried out for 7 years at Menglang, Lancang County. Anopheles minimus remained at a low level, with the vector density in houses averaging 0.002 per person in 1980 and 0.001 per person in 1982. The highest annual parasite incidence (0.92%) occurred in 1982. Malaria cases confirmed microscopically totalled 45, including 39 (86.7%) imported cases and 6 (13.33%) autochthonous cases. All the imported cases were followed up with curative treatment, thereby effectively preventing transmission of this disease among the native inhabitants. The indirect fluorescent antibody test was performed on school children and the results revealed that the 304 and 1232 children tested in 1981 and 1982, respectively, were parasite negative.

195. Dong, J. M. et al. Application of Bekessy's formula in a malaria seroepidemiological survey. Chinese Journal of Epidemiology, 1985, 6(1): 63 (In Chinese)

A seroepidemiological survey using the indirect fluorescent antibody (IFA) test for malaria was carried out among 195 inhabitants of a same locality. Malaria IFA titres were estimated before and after the malaria transmission season and Bekessy's formula (Bekessy et al., 1976) was applied to calculate the daily incidence and recovery rates for patent parasitaemia during the transmission and nontransmission seasons for the purpose of understanding the dynamics of transmission and assessing the effect of control measures.

The incidence rate during the transmission season was slightly higher in 1977 (0.0051) than in 1978 (0.0048), suggesting a higher intensity of transmission in 1977. For the same season the recovery rate was lower in 1977 (0.0068) than in 1978 (0.0096), showing that therapeutic measures were more effective in 1978. According to the changing IFA titres between the consecutive surveys, the positive transition frequencies were 33.6% in 1977 and 13.9% in 1978, while the negative transition frequencies were 51% in 1977 and 71.2% in 1978, demonstrating that the control measures in 1978 were more effective. These estimates reflected the actual malaria situation in the locality studied.

196. Lu, H. M. et al. Rapid staining methods for detection of malaria parasites. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 45-47 (In Chinese, with English abstract)

Seven non-ionic, active surface agents were used in place of the buffer solution pH 6.8 in Field Stain, thereby improving the staining process. The stains containing these non-ionic active surface agents can be prepared for immediate use due to their solubility. The stains kept in different flexible cans or ampoules are particularly suitable for application in field research or field surveys. This staining method for thick blood films that have undergone complete haemolysis is highly applicable in field surveys and clinical diagnosis of malaria. Both Schuffner's and Maurer's dots are visible in red cells infected with Plasmodium vivax or P. falciparum in thin smears. When 10% Giemsa solution prepared with 1% non-ionic, active surface agent is used, the staining of smears takes only 3 minutes.

197. Zhou, Z. X. et al. Cultured Plasmodium cynomolgi used as antigen indirect fluorescent antibody test for vivax malaria. Journal of Parasitology and Parasitic Diseases, 1985, 3(1): 71 (In Chinese)

Sera from healthy people were all negative (1:20) in the indirect fluorescent antibody (IFA) test. Of the serum specimens collected from 10 patients with Plasmodium vivax infections 9 were IFA positive in each of three test series. In the test series using cultured P. cynomolgi as antigen, the nine positive sera reacted at the following titre levels, three at 1:640, three at 1:160 and three at 1:80. In the series with P. cynomolgi antigen, three, four and two sera gave positive titres at dilutions of 1:640, 1:160 and 1:80 respectively. In the series with P. vivax antigen, three, three, two and one gave titres of 1:1280, 1:320, 1:160 and 1:80 respectively. The results suggested that homologous antigen was the best of the three antigens tested while titres obtained with cultured P. cynomolgi antigen were similar to those obtained with P. cynomolgi antigen.

198. Huang, J. Z. et al. Some factors influencing the determination of chloroquine sensitivity of Plasmodium falciparum in vitro. Journal of Parasitology and Parasitic Diseases, 1985, 3(2): 95-97 (In Chinese, with English abstract)

The influence of erythrocyte concentration, the initial parasitaemia and cultivation time on the determination of chloroquine sensitivity of Plasmodium falciparum in vitro was studied. The results showed that the chloroquine concentration required to produce 50% or 95% reduction of the parasitaemia (EC₅₀ or EC₉₅) was positively correlated with the observed erythrocyte concentrations (1.25-10%), the correlation coefficients (r) being 0.94 and 0.92, respectively, and also correlated with initial parasitaemia (0.5-4%), with r equal to 0.95 and 0.99, respectively. A cultivation time of 48 hours was considered to be suitable.

199. Cai, X. Z. et al. The combined use of artemether, sulfadoxine, pyrimethamine and primaquine in the treatment of chloroquine-resistant falciparum malaria. Journal of Parasitology and Parasitic Diseases, 1985, 3(2): 81-84 (In Chinese, with English abstract)

A single intramuscular (i.m.) dose of 300 mg artemether combined with the oral administration of 1000 mg of sulfadoxine, 70 mg of pyrimethamine and 30 mg of primaquine (ASPP) was used to treat 54 patients with chloroquine-resistant falciparum malaria in an endemic area of Hainan Island. Fever was readily controlled in 25.6 + 15.0 hours. Asexual blood parasites and gametocytes disappeared in 30.2 + 12.5 hours and 48.2 + 6.9 hours respectively. Only mild side effects were observed in a few patients.

When compared with three other therapeutic schemes, i.e. a single dose of ASP (primaquine omitted), a single dose of QSPP (0.5 g Qinghaosu i.m. instead of artemether) and chloroquine alone for 3 days, the action of ASPP as well as that of ASP appeared more rapid than that of QSPP both in symptom control and in eliminating asexual forms of P. falciparum. No recrudescence was seen in the combined treatment groups. Chloroquine alone had less effect, with 24 out of 50 patients not cured and 17 showing a recrudescence of parasitaemia within 35 days after treatment. The authors concluded that a combination of either ASPP or ASP is satisfactory in the treatment of chloroquine-resistant falciparum malaria.

200. Cao, M. D. A report of six cases of blackwater fever. Chinese Journal of Infectious Diseases, 1984, 2(2): 132 (In Chinese)

At Mengla State-Farm Hospital, Yunnan Province, six cases of blackwater fever occurring during the course of a malaria attack were seen. They were treated with primaquine and quinine. The onset of acute haemolytic anaemia, haemoglobinuria and haemolytic jaundice was sudden, and the liver and spleen of the patients became rapidly enlarged. The patients were given blood transfusion and hormonal therapy, and antimalarial drug therapy was interrupted. The prognosis was fair, although 2 patients died from complications, one with cerebral hernia and the other with encephaloedema.

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