Experimental infections

Venous blood samples were obtained, with informed consent, from individuals presenting high parasitaemia of *P. vivax* parasites. The blood was collected in heparinized tubes and then distributed to pre-warmed (37°C) membrane feeders (RUTLEDGE et al., 1964). Most of these blood donors had a history of past malaria episodes.

The F1 progenies of field-captured *An. oswaldoi* s.s. and *An. konderi* were fed for 15 min on the *P. vivax* infected blood. *An. darlingi* were fed simultaneously and used as control of each infection because of their high susceptibility to malaria parasites.

Fully fed mosquitoes were maintained under the same environmental conditions, with permanent access to a 10% sucrose solution without further blood meals, in the insectary at Porto Velho, Rondônia, for 10–12 days. After that the midguts and the salivary glands of fed mosquitoes were removed into a drop of saline solution and examined under a coverslip by light microscopy for the presence of oocysts and sporozoites, at a magnification of ×400.

Results

We examined the male genitalia of anophelines from 47 families originating from mosquitoes captured in Rondônia and 48 families from Acre. According to the morphological characteristics of the male genitalia, all families from Rondônia were *An. konderi*, while 41 anopheline families (85.0%) from Acre corresponded to *An. oswaldoi* s.s. and 7 to *An. konderi*. The number of female mosquitoes raised from the 7 families of *An. konderi* from Acre was very low. Therefore, experimental infections with *An. konderi* were conducted with specimens only from Rondônia.

The dissection of both *An. oswaldoi* s.s. and *An. konderi*, fed on *P. vivax*-infected blood, showed that these 2 species developed oocysts in the midguts. The percentage of oocyst-positive mosquitoes for *An. oswaldoi* (13.8%) (n = 29) was higher than for *An. konderi* (3.3%) (n = 30) (Fig. 1).

Comparing the infections of the salivary glands, sporozoites were found in only 2 (6.9%) of 29 *An. oswaldoi* s.s. We did not find sporozoites in the salivary glands of any dissected *An. konderi* (Fig. 2).

Infection rates in *An. darlingi* ranged from 22.5% to 30.0% for both oocysts and sporozoites (Figs 1 and 2).

Discussion

Circumsporozoite proteins (CSPs) of human malaria parasites have been used to identify infection by *Plasmo-

![Anopheles species](image)

**Anopheles species**

Fig. 1. Percentage of *Anopheles oswaldoi* s.s. and *An. konderi* infected with *Plasmodium vivax* oocysts in the midgut compared to percentage for *An. darlingi*, OSW, *An. oswaldoi* s.s., KON, *An. konderi*, DAR, *An. darlingi*. Numbers above bars: positive/total of examined mosquitoes.

![Anopheles species](image)

**Anopheles species**

Fig. 2. Percentage of *Anopheles oswaldoi* s.s. and *An. konderi* infected with *Plasmodium vivax* sporozoites in the salivary glands compared to percentage for *An. darlingi*, OSW, *An. oswaldoi* s.s.; KON, *An. konderi*, DAR, *An. darlingi*. Numbers above bars: positive/total of examined mosquitoes.