Malaria-transmitting *Anopheles* in the Colombian Pacific region

Estefani Piedrahita[1], Laura López[1], Santiago Pemberty[1], Margarita M. Correa[1]

[1] Grupo de Microbiología Molecular, Escuela de Microbiología, Universidad de Antioquia, Medellín, Colombia.

INTRODUCTION

Malaria remains a significant public health concern in Colombia, and particularly, in the most malaria-endemic Pacific region[1]. The detection of *Plasmodium* infected mosquitoes is an important parameter for the incrimination of vectors in malaria transmission[2]. Therefore, the aim of this study was to detect natural infection by *Plasmodium* parasites in *Anopheles* mosquitoes collected in localities of the Colombian Pacific region.

METHODOLOGY

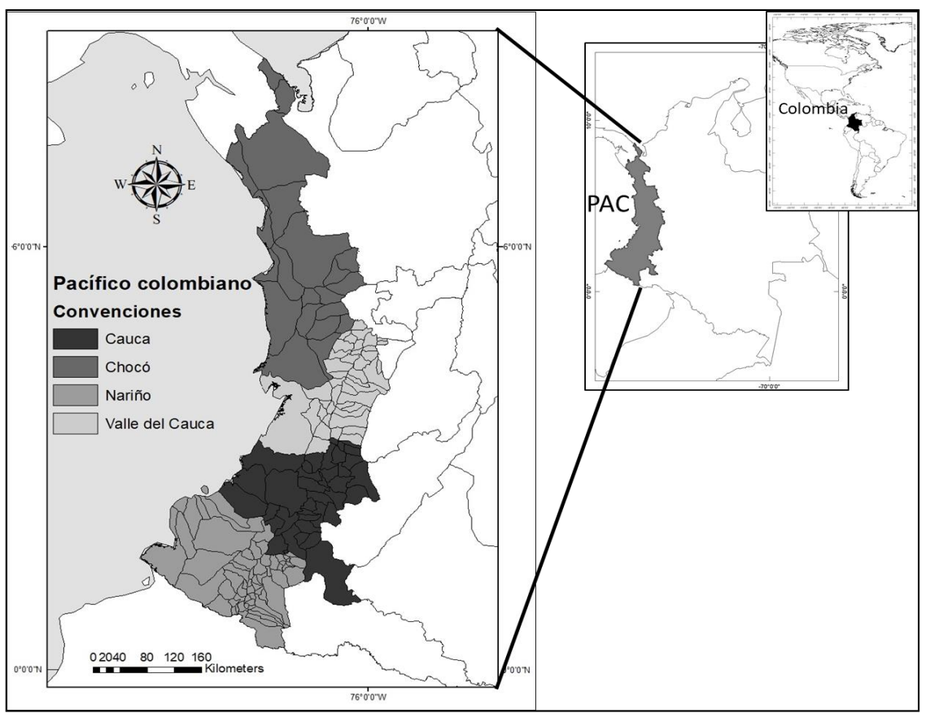
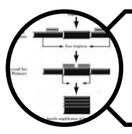


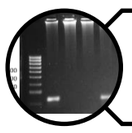
Figure 1. Pacific Region of Colombia. Sampled sites: San Antonio and Basurú, Istmina (Department of Chocó); Buchely and Inguapí del Carmen, Tumaco (Department of Nariño); La Playa and Salahondita, Francisco Pizarro (Department of Nariño); Córdoba and Zacarías, Buenaventura (Department of Valle del Cauca)

Collection of *Anopheles* mosquitoes intra and peridomicile from 18:00 - 24:00 hr

Morphological identification[3]. Molecular confirmation of species assignation (PCR-RFLP-ITS2) [4]



Plasmodium detection by genus-specific nested PCR-18s [5]

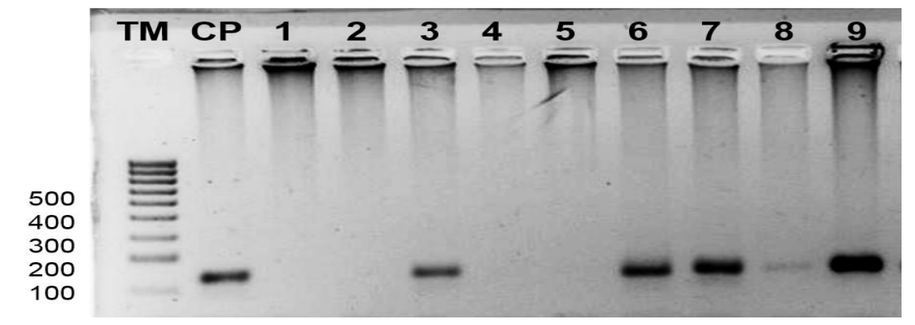


Plasmodium detection by genus-specific PCR-COXIII [6]

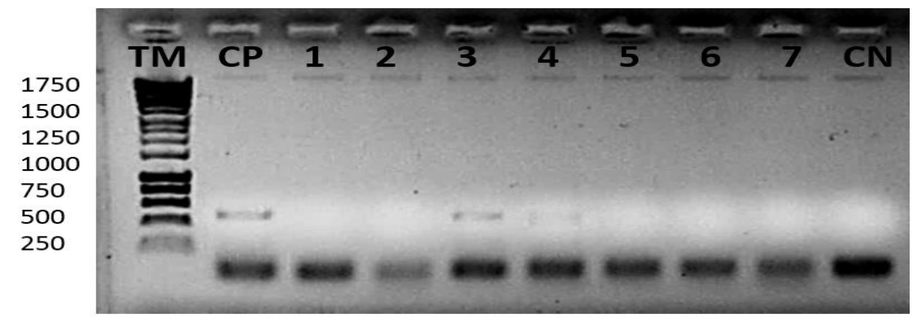
RESULTS

Table 1. Rate of *Anopheles* natural infection by *Plasmodium* spp.

Locality, Municipality (Department)	Species	n (%)	Parasite	Infection rate (%)
Córdoba, Buenaventura (Valle del Cauca)	*Anopheles nuneztovari*	715 (100%)	*Plasmodium* sp. [a]	0.14
Bucheley, Tumaco (Nariño)	*Anopheles albimanus*	191 (90.1%)	*P. falciparum* [a,b]	0.52
Salahondita, Francisco Pizarro (Nariño)	*Anopheles calderoni*	49 (40.2%)	*Plasmodium* sp.[a,b]	2.04
Basurú, Istmina (Chocó)	*Anopheles darlingi*	84 (47%)	*P. vivax* [a,b]	1.2



Nested PCR. CP: Positive control. **Samples 1-9. Lane 6.** *An. albimanus* positive for *P. falciparum* from Tumaco. **Lane 8.** *An. calderoni* positive for *Plasmodium* spp. **Lane 9.** *An. darlingi* positive for Istmina *P. vivax*. Electrophoresis, 0.8% agarose gel. **TM:** 1 Kb GeneRuler molecular marker



***COX*III PCR. CP:** Positive control. CN: Negative control. **Samples 1-7. Lane 3.** *An. albimanus* positive para *P. falciparum* from Tumaco. **Lane 4.** *An. darlingi* positive para *P. vivax* from Istmina. Electrophoresis, 0.8% agarose gel. **TM:** 1 Kb GeneRuler molecular marker

Figure 2. *Anopheles* natural infection by *Plasmodium* spp. using molecular methods.

CONCLUSIONS

The findings suggest that the main malaria vectors, *An. albimanus, An. darlingi* and *An. nuneztovari,* drive transmission in this region, but their distribution varies spatially.

The detection of *Plasmodium* natural infection in *An. calderoni* suggests its role as a local vector in specific areas.

These findings indicate that malaria transmission and vector roles vary spatially, emphasizing the need for locally adapted vector control interventions.

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