

## **THE MOSQUITO LANDING RATE AS A CONNECTION PARAMETER BETWEEN LABORATORY AND FIELD SETTINGS**

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**Abstract** Vector-borne diseases have increased in importance becoming a human health concern at global level. For many of these diseases no vaccines are available, then, the personal protection products and the vector control programs will remain essential tools for protection against transmission. In Europe, insecticides and repellents are strictly regulated and before any of them can be authorized and marketed, they must meet the high standards of human, environmental and efficacy requirements that the Biocidal Products Regulation requests. Since 2017, The European Chemical Agency is reviewing and updating the guidance for the Product Type 19, where attractants and repellents are included. The objective of the study was to determine the conditions required to obtain, under laboratory conditions, a similar landing pressure obtained in a natural high infested area of our target mosquito, *Aedes albopictus*. To assess the landing pressure at field level, 16 volunteers participated in the study that was conducted in Italy in a high infested area of mosquitoes. Results from the field were compared to those obtained at the laboratory in a 30 m<sup>3</sup> cabin where 9 volunteers were exposed to different number of mosquitoes (15 to 20, 25 to 30 and 40 to 50). At field level, 26.8 mosquito landings per minute was the highest value of landing pressure, while in the laboratory, 15-20 mosquitoes and 3 minutes of exposure were the conditions required to achieve a similar pressure. We succeeded in replicating outdoor high mosquito landing pressure in indoor laboratory conditions using 0.5-0.66 mosquitoes/m<sup>3</sup>. This study provides useful values for the development of the European guidance and allow us to define new parameters, requirements and methodologies to evaluate Spatial and Topical repellents against mosquitoes in the laboratory simulating field conditions.

**Key words** *Aedes albopictus*, landing pressure, repellents