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ANTIMICROBIAL RESISTANT BACTERIA IN FLIES CAPTURED IN DIFFERENT URBAN AREAS IN RIO DE JANEIRO CITY.

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CARRAMASCHI; ISABEL NOGUEIRA [1], LEITE; JÉSSICA ALBUQUERQUE [2], CARNEIRO; MARCOS TAVARES [3], CHAGAS; THIAGO PAVONI [4], ZAHNER; VIVIANE [5], .; [6]

RESUMO

Antibiotic resistance is disseminated to the most diverse interconnected environments, such as: animals, farms, soil, sewage, residences, restaurants, community in general, including hospitals. The muscoid dipterans are those which frequent all these environments and so can act as one of the main agents of dissemination and dispersion of pathogens. In this study, antimicrobial-resistant bacteria were isolated from muscoid dipterans collected in five different areas of Rio de Janeiro city. The localizations were selected according to the proximity to hospitals: Point 1- Amorim Community; Point 2 - Fiocruz Institute campus; Point 3 - Quinta da Boa Vista; Point 4 - Interior of a municipal hospital and Point 5 - 100 meters from Point 4, where there was a bucket of household waste used by local residents. The extract obtained by fly maceration was diluted and plated in different culture media, with and without antibiotic (ceftriaxone 1mg/L). Purified isolates were submitted to antimicrobial susceptibility testing (AST). Bacterial identification was performed by MALDI TOF Microflex LT (Bruker Daltonics). A total of 197 bacterial strains were obtained from 117 dipterous muscoids. Insects belonging to the families Calliphoridae, Sarcophagidae and Muscidae were identified and amongst them bacteria part of the acronym ESKAPE (*Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacter* spp.). 42 flies (35.9%) carried bacteria resistant to at least one antimicrobial while 7 insects (5.9%) carried 10 multidrug-resistant bacteria (5%). 5 strains (2,5%) where PCR positive for one or more of the *aac(6')-Ib, bla*$_{TEM}$, *bla*$_{CTX-M}$, *bla*$_{KPC}$ and *bla*$_{NDM}$ resistance genes. Analysis of variance (ANOVA) and cluster analysis compared the number of resistant isolates per collection point and showed a statistically different point from the others regarding to resistance. Although there still no criteria to determine the environmental contamination by resistant bacteria the fact that it has been isolated from flies is an indication of a spread contamination. As such these insects can be useful as an alert in monitoring programs of antibiotics resistance in non hospital environments being looked as a sentinel animal.

PALAVRAS-CHAVE: Muscoid Dipterans, One Health, Resistance genes.

[1] Instituto Oswaldo Cruz, isabelcarramaschi@gmail.com
[2] Instituto Oswaldo Cruz, jessicaa.leite@outlook.com.br
[3] Escola Nacional de Saúde Pública Sérgio Arouca, marcostavares19@gmail.com
[4] Universidade Federal Fluminense, thiagopavoni@gmail.com
[5] Instituto Oswaldo Cruz, vivazahner@yahoo.com.br
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