Pharmacaule: Larvicidal, Insecticide and Repellent Potential of Active Principles of Tucum-Mirim (Astrocaryum acaule) in the Control of Arthropods That Transmit Arboviruses

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In Brazil's Amazon region, the local population uses the extract from the pulp and the oil of the Tucum Mirim, commonly called Astrocaryum Acaule, as a home-made oil to prevent and treat arthropods bites besides reducing these diseases. Therefore, this research project goal is to obtain a bioactive drug extracted from the Astrocaryum Acaule to optimize its insecticide, larvicide, and repellent properties and produce an arbovirus alternative control method. The following steps were conducted: collecting the fruits, producing its alcohol and extracting the oil, obtaining the extract, purifying the samples, extracting the active principles, separating the secondary metabolites, maximizing the active principles efficiency and analyzing the samples' efficiency, genetics and molecular properties modification in larvae of Haematobia Irritans flies. After preparing 100ml of the extract, dillapiole, icaridin, diethyltoluamide and cypermethrin compounds were found. This compound was divided into 4 samples with: (1) 31.1%, (2) 68.1%, (3) 68.7%, and (4) 86.9% of the active principle. Repellency tests showed that sample 04 was 100% effective and caused the death of 56% of the insects. The other samples showed greater than 90% effectiveness. In addition, the tests performed with 6 bovins of Angus species showed that after 24h, 100% of the flies and carrapats were repelled. The genetics and molecular tests showed an alteration on the amino acid's codons of methionine and tryptophane, which was able to destroy the uracil and Guanine, causing the death of the larvae or for the ones who survived, the extract produced turned the individuals esterile. This research project proves the efficiency of the sustainable and maximized drug efficiency as a insecticide, larvicide, and repellent.

Awards Won:
Second Award of $2,000