Inorganic materials applied to the *Aedes aegypti* control

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The *Aedes aegypti*, principal mosquito vector of most important arbovirus in the world, is responsible for 2.5 billion people live in an area of high risk of contagion and infection by 50 million people annually, with many of them children. Fairly common disease in tropical and subtropical areas around the world, including Brazil. In the absence of vaccines for disease prevention, the only means of extermination is the fight against mosquito larvae. Chlorination of water was a major means of eradication of mosquito larvae, but the use of sodium hypochlorite (NaClO), because it is a product of low production cost and high efficiency disinfection, has become a problem because generates carcinogenic byproducts, trihalomethanes (THMs). This study sought to investigate the use of advanced oxidation processes (AOPs) to fight the elimination of the v ector of dengue. For this, a synthesized hybrid titania and silica doped with silver, by sol-gel process, to be used as a photocatalyst, as a means of eliminating of the *Aedes aegypti* larvae. These materials were characterized by infrared spectroscopy Fourier transform (FTIR), porosity analysis by the mathematical model of Stephen **B**runauer, Paul Hugh **E**mmett and Edward **T**eller (BET), Thermogravimetric Analysis (TGA) and diffraction X - ray (DXR); and subsequently applied in bioassays, which were carried out in quintuplicate and concentrations of 1 mg mL^{-1} (T1), 0.5 mg mL^{-1} (T2) e 0.25 mg mL^{-1} (T3). The infrared spectrum detected characteristic signals of modification with silica and silver, the X- ray diffraction was of great importance in analyzing the crystal structure identified after modification, as well as the porosimetry indicated that, in addition to other data, the pore volume value as 0.069635 m^2 g^{-1} e 0.062133 m^2 g^{-1}, adsorption and desorption, respectively, characterizing the formed compound as the type mesoporous and suggesting a certain degree of elasticity in the sample. Thermogravimetric analysis, in turn, claimed a great stability amid the rise in temperature (up to 800°C), having an average of 8 % mass lost during the process. The larvicide tests, in turn, were promising, obtaining the total of larvae deaths subjected to 1 hour of testing. The synthesis presented itself of simple execution not requiring very elaborate mechanisms for tis confection whose characterizations demonstrated the modification of the composite structure by adding silver and titanium dioxide and led to the decrease of the production cost without losing the efficiency of its high power larvicide. This study reached the expectations outlined. [3]

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