Preparation of Surfactants Mixture from Cashew Nut Shell Liquid and Castor Oil to Combat the Dengue Mosquito Larvae, Phase Two

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Dengue fever is a viral disease caused by the dengue virus, which affects 390 million people worldwide every year. It is transmitted through the bite of the Aedes aegypti female mosquitoes and there is no specific treatment for this disease, the only way to prevent it is eliminating its vector. This prevention is done using toxic insecticides released into the air often lose their effect. Natural repellents and larvicides are described as the best way to combat this vector, because they work in specific locations and they are cheap and less toxic to humans. I developed a larvicidal and repellent adhesive of controlled release that is simple, compact, inexpensive and harder to the mosquito develop resistance. It is a natural product made from industrial waste, its production is extremely simple, and its scope reaches about 95% of mosquito breeding places. The larvicide repellent was developed from a mixture of Cashew Nut Shell Liquid in nature and Castor Oil that has been transformed into a solid surfactants mixture that is soluble in water. This mixture was prepared so as to achieve immunize of water. They were covered with a lacquer layer made from technical (CNSL) and castor oil and they were left to exposure to ultra-violet radiation, so that the molecules of CNSL have formed polymers and it expelled out molecules of castor oil, forming micro holes, where the larvicide is released controllably. Then, it was wrapped in filter paper and attached to a waterproof adhesive. The mixture of surfactants was tested and showed larvicidal and repellent activity at the concentration of 1 ppm in water. The adhesive was tested and showed a dissolution time 8 times longer after applying the varnish layer, making it ideal for areas exposed to rain.

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