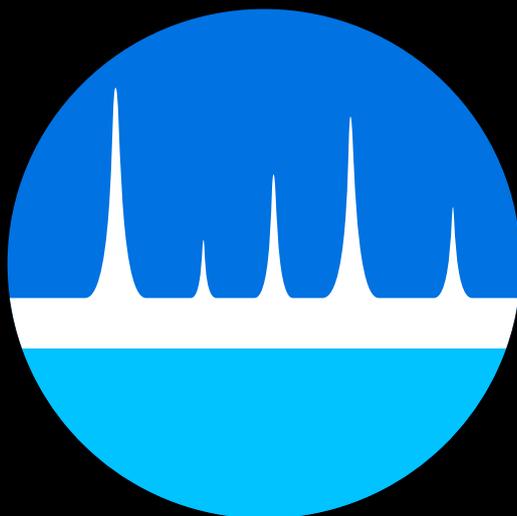


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# DEVELOPMENT OF A SUSTAINABLE METHODOLOGY BASED ON THE DISPOSABLE PIPETTE EXTRACTION (DPX) TECHNIQUE USING A BIOSORBENT OF SILICA-GRAPHENE OXIDE MODIFIED WITH CHITOSAN FOR TRIAZOLES DETERMINATION IN FRUITS USING LC-MS/MS

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Some of the most consumed fruits daily in Brazil are tomatoes and bananas. However, their cultivation requires the use of pesticides for protection. Among these, triazole-class fungicides are currently among the most widely used worldwide. Despite this, these chemicals can harm human health and the environment. For this reason, their application is subject to various restrictions, making it necessary to develop appropriate methods for their detection and quantification. Miniaturized extraction techniques, such as Disposable Pipette Extraction (DPX), offer great versatility for evaluating complex matrices. In this context, developing new sorbents, especially those based on graphene oxide, has attracted considerable interest due to their physicochemical properties and ability to be modified to acquire enhanced and specific properties for various applications. Aiming to create hybrid sorbents, incorporating chitosan into graphene oxide emerges as a promising alternative for developing a new biosorbent with potential applications in the evaluation of pesticides in food matrices. In this study, a silica-graphene oxide@chitosan (SiGO@CS) sorbent was synthesized and employed to extract triazoles by DPX in tomato and banana samples. The sorbent characterization was performed using Fourier-transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy (EDX), thermogravimetric analysis (TGA), and Accelerated Surface Area and Porosimetry (ASAP), confirming the successful modification of SiGO@CS. Optimization was carried out on several parameters influencing DPX performance, including pH, salt effect, extraction and desorption cycles, sample and elution volumes, equilibrium time, and desorption solvents. The optimization and analytical application of the method are currently underway. We expect the method to be fully optimized and applied to evaluate triazoles in commercial fruit samples from São Carlos, Brazil, in the coming months.

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