18th World Congress on

Nutrition and Food Chemistry

September 25-26, 2019 | Copenhagen, Denmark

Effective detection and removal of tetracycline residues from contaminated food samples by CNS/Zr-absorbents

Qingfeng Yang and **Yongkang Luo**
China Agricultural University, China

CNS/Zr, a novel adsorbent, is applied to determination and removal of Tetracycline residues (TC) from the contaminated food samples for food safety. The CNS/Zr adsorbent was successfully fabricated via solvothermal synthesis and characterized by Scanning electron microscope (SEM), Transmission electron microscope (TEM), and Powder X-ray diffraction patterns (PXRD). The obtained CNS/Zr nanoparticles was used to adsorption and removal of TC, and the influence of pH and adsorption time was also investigated, and the results indicate that the adsorption capacity of CNS/Zr for TC at pH 2-3 under room temperature is higher than that at the other pH. What's more, adsorption behavior of CNS/Zr exhibits a good fitting to Freundlich isotherm model and Temkin isotherm model, indicating the adsorption process of TC on CNS/Zr is a multi-step process. The maximum adsorption capacities of TC are higher than that of the most reported adsorbents. Moreover, due to its chemiluminescence characteristics, the CNS/Zr adsorbent is used as a novel sensor for detection of TC in the food samples including fish muscle. The CNS/Zr sensor provided a wide linear range for TC of 0.1 to 20.0 mg g−1 under the optimist conditions, and the relative standard deviation (RSD) for the different concentration of TC (0.5 to 20 mg g-1) was at the range of 1.7 - 6.3%, suggesting the CNS/Zr can effectively detect the TC in food samples. These results prefigure the promising potentials of CNS/Zr in food safety risk management and control of food hazards.