

**ABSTRACT**

In recent times, research related to the use of waste of organic origin has increased considerably, mainly those studies related to the removal of heavy metals in aqueous solutions. The present research work entitled "Adsorption of chromium VI in tannery wastewater using calcined eggshell", has as its main objective to evaluate the use of calcined eggshell, as an adsorbent substrate for the removal of Chromium VI from wastewater.

The eggshell was collected from a pastry shop, washed with water to remove impurities, dried at 80°C in a stove, then crushed to a particle size less than 0.149mm, in a muffle at 800°C for a time of 2 hours. Tests of the adsorbent were carried out with the solution that initially contained a high percentage of chromium VI, the tests were carried out in a discontinuous process and with constant agitation, in order to determine the factors that affect the adsorption of chromium VI, which were: weight of calcined eggshell of 20 gr / L, 35 gr/L and 50 gr/L; contact time substrate / solution 30min, 60min and 90min and finally initial concentration of chromium VI in the effluent of 202ppm and 405ppm. For the determination of the final concentration of chromium VI after concluding with the adsorption time, the Standard Method of determination of hexavalent chromium in water (SM 3500 – Cr. B) was used, and for the measurement of absorbance a UV/Vis 2800 spectrophotometer was used. After concluding with all the runs and performing their respective absorbance measurement at a wavelength of 540nm, a maximum percentage of adsorption of 85.94% and 95.44% was obtained for an initial concentration of 202ppm and 405ppm respectively in a time of 90 min in both cases, with which it can be affirmed that the calcined eggshell residue presents a high capacity of adsorption of chromium VI in solutions Aqueous.

The adsorption isotherms of Langmuir and Freundlich were also determined, the first being the one that best fits the adsorption of chromium VI with calcined eggshell resulting in the formation of a uniform monolayer.

Finally, the ANOVA statistical method was used to see which independent variable had the greatest influence on the adsorption of chromium VI, determining that the variable with the most influence was the substrate/solution contact time.