

# VOLTAMMOGRAM OF MEDICINAL EFFICIENT WILD PLANTS (ANREDERA CORDIFOLIA), AGERATUM CONYZOIDES L., AND CHROMOLAENA ODORATA)

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## ABSTRACT

Cyclic voltammograms have an important role in studying the characteristics of a system, including studying the components that exist in a system. In Indonesia, many plants grow with medicinal properties which are often not utilized optimally, because the components they contain are not widely understood. Therefore, it is natural for research to be carried out regarding medicinal plants, especially regarding the components they contain. This research will study the voltammogram of *Anredera cordifolia*, *Ageratum conyzoides* L., and *Chromolaena Odorata* plants, which have medicinal properties but have not been widely used. The cyclic voltammograms of *Anredera cordifolia*, *Ageratum conyzoides* L., and *Chromolaena Odorata* leaf extracts were carried out with the addition of 5 g NaHCO<sub>3</sub>/L water with stainless steel electrodes and stainless steel/Fe-Co-Ni was carried out using the eDaq eChem voltameter at the UNY Chemistry Laboratory. The research was carried out at room temperature (25<sup>o</sup> C), with varying scan rates of 50 mV/s, 80 mV/s and 100 mV/s, with varying concentrations of *Anredera cordifolia*, *Ageratum conyzoides* L., and *Chromolaena Odorata* leaf extract of 0.2 g/mL; 0.04 g/mL; 0.008 g/mL; 0.0016 g/mL; 0.00032 g/mL; 0.000064 g/mL. Characterization of the stainless steel and stainless steel/Fe-Co-Ni using spectroscopy-microscopy (scanning electron microscope-energy dispersive x-ray spectroscopy) and XRD (x-ray diffraction).

The electrochemical process of *Anredera cordifolia* extract using stainless steel electrodes at a concentration of 0.00032 g/mL provides the highest relative anodic and cathodic peaks or optimum electrocatalytic properties of *Anredera cordifolia* extract. When using stainless steel/FeCoNi electrodes, the highest cathodic and anodic peaks were achieved at a concentration of 0.2 g/L. *Ageratum conyzoides* L. extract is similar to *Anredera cordifolia* extract, when using stainless steel electrodes the highest anodic and cathodic peaks are at a concentration of 0.00032 g/mL or it can be said that the electrocatalytic properties of *Ageratum conyzoides* L. extract are optimum. When using stainless steel/FeCoNi electrodes, the highest cathodic and anodic peaks were achieved at a concentration of 0.2 g/L. The electrochemical process of *Chromolaena Odorata* extract using stainless steel electrodes at a concentration of 0.04 g/mL gave the highest relative anodic peak, while at a concentration of 0.00032 g/L the relatively highest cathodic peak. When using stainless steel/FeCoNi electrodes, the highest cathodic and anodic peaks were achieved at a concentration of 0.2 g/L. The higher the scan rate, the higher the anodic and cathodic peaks. The activity of stainless steel/Fe-Co-Ni electrodes in *Anredera cordifolia*, *Ageratum conyzoides* L., and *Chromolaena Odorata* leaf extracts is relatively better than stainless steel electrodes, both in terms of product and energy, especially in the anodic process (has the best relative efficiency (from the product side: 0.9319 mA, from the energy side it requires the smallest relative energy: 0.094 V). In the cathodic process, the product efficiency is relatively highest in the *Chromolaena Odorata* extract using stainless steel electrodes (- 1.9667 mA), while in terms of energy, the relatively smallest energy requirement is electrolysis of *Ageratum conyzoides* L. extract with stainless steel electrodes (- 1.11 V). Based on the FTIR spectra, it shows that the plants extracts contain C=N, C=C, N-H (amine), C≡C, -N=C=N (dimide), C-H and N-H (amine secondary) groups

Kata Kunci: *cyclic voltammogram, herbal, Anredera cordifolia, Ageratum conyzoides L., Chromolaena Odorata*