STAINLESS STEEL VOLTAMMOGRAM IN EXTRACT OF LEAVES (PIPER BETLE, PIPER ORNATUM, PERSEA AMERICANA, AND CARICA PAPAYA), AND FLOUR OF PERSEA AMERICANA, AND CARICA PAPAYA L SEEDS

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ABSTRACT

As a crucial method to study the characterization of the electrolysis process, including the water electrolysis, the cyclic voltammogram draws many scholarly intentions. The electrolysis process is a well-known method to produce hydrogen gas. Hydrogen gas, a prospectus alternative energy, is renewable, environmentally friendly, and has a high energy density. The optimization process of hydrogen production still has a large room for improvement. Thus, the study tried to increase the hydrogen gas production through media addition such as extract of leaves (*Piper betle, Piper ornatum, Persea Americana,* and *Carica Papaya L)* and some types of flour (*Persea Americana*, and *Carica Papaya L* seeds) using cyclic voltammogram as the characterization method. The water electrolysis was conducted in the base solution by adding 5 g/L of $NaHCO_3$ and single media with a specified concentration. Stainless steel, S-430, was used in the electrode. The electrolysis was carried out at different temperatures 25, 35, and 45 °C. Stainless steel was characterized by linear sweep voltammetry, SEM-EDX and XRD, while the media was analyzed by FTIR. The optimum condition was observed at high hydrogen gas production and low energy consumption. The positive effect had occurred with the addition of the leaves extract (*Piper betle, Piper ornatum, Persea Americana,* and *Carica Papaya L*) and the flour made from *Persea Americana* fruit and peel with the increasing of the cathodic current peak. However, the addition of *Persea Americana* seeds had a negative effect on hydrogen gas production. Temperature also had a positive trend compared to the cathodic current peak. The optimum conduction, -1.1967 mA and overpotential of 0.91 V, was occurred by the addition of 6 g/L of *Persea Americana* peel flour at 45 °C.

Kata Kunci: *voltammogram, stainless steel, media, temperature, cathodic current peak*