ABSTRAK

STUDI *RECOVERY* EMAS PADA FLOTASI MINERAL EMAS *LOW SULFIDE* MENGGUNAKAN EKSTRAK LERAK DIBANDINGKAN REAGEN KIMIA (*XYLENE* DAN *PINE OIL)*

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Penelitian ini bertujuan untuk menganalisa kinerja proses flotasi bijih emas *low sulfide* dengan membandingkan penggunaan ekstrak buah lerak (*sapindus rarak*) dengan reagen kimia konvensional berupa *xylene* dan *pine oil*. Bijih yang digunakan mempunyai kadar 0,1811 ppm sedangkan umpan sebanyak 1000 gram tiap sampel dan penggunaan reagen sebanyak 15ml/kg untuk setiap reagen yang digunakan. Variasi yang digunakan *ada* empat yaitu sampel A (ekstrak lerak), sampel B (ekstrak lerak & *pine oil*), sampel C (ekstrak lerak & *xylene*), sampel D (*xylene & pine oil*) sebagai kontrol tanpa penambahan bioreagen. Parameter utama yang dianalisis meliputi kadar konsentrat, *mass pull, recovery* (*Rc & Rm*). Hasil penelitian menunjukan bahwa sampel D memiliki kadar konsentrat tertinggi yaitu 1,7434 ppm. *Mass pull* tertinggi terdapat pada sampel A yaitu 24,4%. Dan perolehan *recovery* sampel C memiliki *recovery* terbesar sebanyak *Rc 70,23%* dan *Rm* 73,95%. Hal ini menunjukan bahwa penggunaan reagen ekstrak lerak tanpa penambahan reagen lain hanya unggul dalam perolehan *mass pull*. Sedangkan penambahan reagen ekstrak lerak & *xylene* mempunyai hasil yang cukup efisien dilihat pada nilai *recovery* pada sampel C, hal ini menunjukan bahwa kombinasi ekstrak lerak ditambahkan dengan kolektor *xylene* mampu meningkatkan proses selektifitas mineral berharga dan merubah sifat permukaan mineral sehingga nilai *recovery* tinggi. Akan tetapi penggunaan ekstrak lerak belum sepenuhnya dapat menggantikan reagen kimia konvensional untuk meningkatkan kadar konsentrat dikarenakan sampel D penggunakan kolektor *xylene* dan *froter pine oil* memiliki kadar konsentrat tertinggi yang menunjukan selektifitas mineral berjalan dengan sangat baik. Penelitian ini terbatas pada variasi reagen sehingga hasil dapat berubah dengan penambahan parameter lain yang dapat mempengaruhi nilai *mass pull*, kadar konsentrat, dan *recovery.*

Kata kunci: Bioreagen, Emas sulfida rendah, Flotasi, Lerak, *Recovery.*

ABSTRACT

GOLD RECOVERY STUDY IN FLOTATION OF LOW-SULFIDE GOLD MINERAL USING SOAP EXTRACT COMPARED WITH CHEMICAL REAGENT (XYLENE AND PINE OIL)

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This study aims to analyze the performance of low sulfide gold ore flotation process by comparing the use of soapberry (Sapindus rarak) fruit extract bioreagent with conventional chemical reagents in the form of xylene and pine oil. The ore has grade 0,1811 ppm and the feed is 1000 gram for each sample, use of each reagent is 15ml/kg for every sample. There are four variations used, namely sample A (soapberry extract), sample B (soapberry extract & pine oil), sample C (soapberry extract & xylene), sample D (xylene & pine oil) as a control without the addition of bioreagent. The main parameters analyzed include concentrate content, mass pull, recovery (Rc & Rm). The results showed that sample D had the highest concentrate content of 1.7434 ppm. The highest mass pull was found in sample A, 24.4%. And the recovery of sample C had the largest recovery of Rc 70.23% and Rm 73.95%. This shows that the use of soapberry extract reagent alone is only superior in mass pull but has low concentrate and recovery levels. While the addition of soapberry extract reagent & xylene has quite efficient results seen in the recovery value in sample, this shows that the combination of soapberry extract added with xylene collector is able to increase the selectivity process of valuable minerals and change the surface properties of minerals so that the recovery value is high. However, the use of soapberry extract has not been able to completely replace conventional chemical reagents to obtain concentrate levels because sample D using xylene as collector and pine oil as froter has the highest concentrate level which shows that mineral selectivity is running very well. This study is limited to reagent variations so that the results can change with the addition of other parameters that can affect the mass pull value, concentrate levels, and recovery.

Keywords: *Bioreagen, Emas Low Sulfide Gold Ore, Flotation, Lerak, Recovery.*