PEMANFAATAN TEPUNG DAUN KELOR (*Moringa oleifera* Lamk) *PRETREATMENT* ASAM DAN TEPUNG IKAN LELE TERHADAP PEMULIHAN ANEMIA SECARA *IN VIVO*

UTILIZATION OF KELOR LEAVES (*Moringa oleifera* Lamk) POWDER WITH ACID PRETREATMENTS AND CATFISH POWDER ON ANEMIA RECOVERY IN VIVO

Tesis
Untuk memenuhi sebagian persyaratan
Mencapai derajat S2

Magister Ilmu Gizi

Ayutha Wijinindyah
25010510400002

PROGRAM PASCASARJANA
UNIVERSITAS DIPONEGORO
SEMARANG
Desember
2012

ABSTRAK

PEMANFAATAN TEPUNG DAUN KELOR (*Moringa oleifera* Lamk) *PRETREATMENT* ASAM DAN TEPUNG IKAN LELE TERHADAP PEMULIHAN ANEMIA SECARA *IN VIVO*

Ayutha Wijinindyah

Latar Belakanng : Anemia defisiensiensi zat besi merupakan masalah utama dengan prevalensi–50% terjadi di negara berkembang. Untuk itu, diperlukan kajian tentang penggunaan bahan pangan alternative sumber zat besi seperti daun kelor (*non heme*) dan ikan lele (*heme*) serta *pretreatment* asam untuk membantu penyerapan zat besi secara *in vivo*. **Tujuan Penelitan** : mengkaji tepung daun kelor hasil *pretreatment* asam dan tepung ikan lele –dalam upaya pemulihan anemia defsiensi zat besi berdasarkan pengukuran zat besi dan hemoglobin pada uji *in vivo*.
Metode Penelitian : Penelitian ini terdiri dari dua tahap. Tahap pertama pembuatan tepung daun kelor hasil *pretreatment* asam dengan bahan pengasam yang dipakai: asam askorbat 0,5%; asam sitrat 0,5%; jeruk nipis 0,5% dan jeruk nipis 50% (225 ml + 225 ml aquades) dan tepung ikan lele. Penelitian tahap kedua yakni upaya pemulihan anemia melalui pemberian pakan tepung daun kelor hasil *pretreatment* asam dan tepung ikan lele pada tikus *wistar*. Empat puluh dua tikus dibuat anemia melalui pakan tanpa zat besi selama 7 hari, dilanjutkan pemberian pakan perlakuan selama 14 hari yakni AIN 93M; tepung daun kelor dan tepung ikan lele sebagai kontrol; tepung daun kelor hasil *pretreatment* asam sitrat 0,5%; tepung daun kelor hasil *pretreatment* asam sitrat 0,5% + tepung ikan lele (1:1); tepung daun kelor hasil *pretreatment* jeruk nipis 0,5%; tepung daun kelor hasil *pretreatment* jeruk nipis 0,5% + tepung ikan lele (1:1) dengan kriteria pemulihan nilai zat besi >80 µg/dl dan hemoglobin >10 g/dl. Data dianalisa dengan uji *Anova* dilanjutkan dengan *LSD*
Hasil Penelitian : Dua *pretreatment* asam terbaik pada penepungan daun kelor berdasarkan parameter Fe (organik dan anorganik) yakni tepung daun kelor hasil *pretreatment* asam sitrat 0,5% (%Fe 0,0201± 0,0007) dan tepung daun kelor hasil *pretreatment* jeruk nipis 0,5% (%Fe 0,0219± 0,0002). Tikus dengan perlakuan pakan tepung daun kelor kontrol (zat besi 101,2240 µg/dl dan hemoglobin 11,1720 g/dl), tepung daun kelor hasil *pretreatment* asam sitrat 0,5% (zat besi 90,3640 µg/dl dan hemoglobin 10,6750 g/dl); *pretreatment* jeruk nipis 0.5% (zat besi 115,5110 µg/dl dan hemoglobin 12,1240 g/dl); serta *pretreatment* jeruk nipis 0.5% + tepung ikan lele (1:1) (zat besi 107,2910 µg/dl dan hemoglobin 11,2480 g/dl) dapat digunakan untuk pemulihan anemia *in vivo*.
Simpulan : Hasil terbaik pemulihan anemia didapat pada tikus dengan pemberian pakan tepung daun kelor hasil *pretreatment* jeruk nipis 0,5%.

Kata kunci : anemia, zat besi, hemoglobin, *pretreatment* asam, *Moringa oleifera*.

ABSTRACT

UTILIZATION OF *KELOR* LEAVES (*Moringa oleifera*Lamk) POWDER WITH ACID PRETREATMENTS AND CATFISH POWDER ON ANEMIA RECOVERY *IN VIVO*

Ayutha Wijiindyah

Background : Iron deficiency anemia is the most important micronutrient deficiency and 50% prevalency has occured in the developing country today. Therefor, the studies on the use of alternative food as a source of iron like kelor leaves (non heme) and catfish (heme) as well as the acid pretreatment use to support of iron absorption by in vivo
Objectives : To examinate of kelor leaves powder with acid pretreatments and catfish powder to effort anemia recovery based on iron measurements and hemoglobin in vivo test.
Methods : Tis study consisted of two phases. The first phase was powdering process of kelor leaves acid pretreatment by soaking ingredients with ascorbic acid 0.5%; citric acid 0.5%; lime 0.5%; and lime 50% (225 ml + 225 ml aquades); and catfish powder. The second phases was anemic recovery effort through feeding kelor leaves powder with acid pretreatment and catfish powder in wistar rats. Forty two rats were made anemic by feeding without iron for 7 days, followed for 14 days by feeding with AIN 93 M; rats with kelor leaves powder; rats with kelor leaves powder result citric acid 0.5% pretreatment; rats with kelor leaves powder result citric acid 0.5% pretreatment + catfish powder (1:1); rats with kelor leaves powder result lime 0.5% pretreatment; rats with kelor leaves powder result lime 0.5% pretreatment + catfish powder (1:1); rats with catfish powder with criteria iron recovery rate of >80 µg/dl and hemoglobin >10 g/dl. Data were analyzed ANCOVA and followed by LSD test
Results : Two of the best acid pretreatments on processing kelor leaves powder by Fe parameters (organic and anorganic) was kelor leaves powder acid result citric acid 0.5% pretreatment (%Fe 0,0201± 0,0007) and kelor leaves powder acid result lime 0.5% pretreatment (%Fe 0,0219± 0,0002). Rats by treatment with kelor feed control (iron 101,2240 µg/dl and hemoglobin 11,1720 g/dl); kelor leaves powder result from citric acid pretreatment 0.5% (iron 90.3640 µg/dl and hemoglobin 10.6750 g/dl); lime pretreatment 0.5% (iron 115.5110 µg/dl and hemoglobin 12.1240 g/dl); lime pretreatment 0.5% + catfish powder (1:1) (iron 107.2910 µg/dl and hemoglobin 11.2480 g/dl) can used for recovery anemia in vivo.
Conclusion : The best resulf for anemia recovery in vivo were obtained by feeding kelor leaves powder result lime pretreatment 0.5%.

Keywords : *anemia, iron, hemoglobin, acid pretreatment, Moringa oleifera* Lamk