Comparision and Extract Hypoglycemic Activity Root Extract Tablet Cats (Acalypha Indica Linn) Mice the White Male Strain Ddy

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ABSTRACT--- ***The study concerning to the comparison of hypoglycemic activity of the extract and Acalypha indica Linn. Tablet in mice male ddy strain that has been conducted . The purpose of this study is to compare the hypoglycemic activity of the leaf, herb and root extract and it's tablets between pure extracts and extract tablets . Mice were divided into 8 groups, namely Normal Controls (KN), Glibenclamide (G) Leaf Extract (ED), Herbal Extract (EH), Root Extract (EA), Tablets Leaf Extract (TD), Herbal Extract Tablets (TH), and Tablet Root Extract (TA). Measurement of blood glucose level performed at 4 time points; fasting blood sugar (T_0), 30 minutes after the test material (T_{30}), 30 min after glucose administration (T_{30} pc) and 2 hours after glucose administration/post prandial (T_{120} pc). The results showed that the group of ED and EA, and TD and TH have hypoglycemic effects that differ significantly by group KN. EH and TA group had hypoglycemic effects that did not differ significantly by group KN. ED had significantly different hypoglycemic activity with EH and EA. There is no significant differences between the hypoglycemic activity of the tablets extract for all grups. Herb extract had significantly different hypoglycemic activity with it's tablets.***

Keywords--- Acalyphaindica, hypoglycemic activity, Extract Tablet

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1. INTRODUCTION

The use of natural ingredients to address the health problems increasingly become the choice by the public lately. Natural materials or traditional medicine is considered safe than modern medicine (synthesis), because it has relatively minor side effects when its used appropriately. The accuracy of dosage forms of drugs that consumed will determine the pharmacological effects of medicinal plants. Effectiveness of botanicals and extracts shape will vary with the capsule or tablet dosage forms of other pharmaceutical preparations (Anonymous, 2008).

Study the efficacy and safety of medicinal plants continues recently as more people who use herbs to maintain health and cure the diseases. However, most existing studies are still using pure extracts that have not made tablets, or tablets made their pharmacological effects have not been tested yet. Making a tablet dosage should give the same effect or better than its extract form, in addition to aspects of practicality. Additional material contained in the tablet and the tablet compression machine it must be confirm not affect the efficacy of the extract. The absence of efficacy studies medicinal plant extracts in tablet dosage forms prompted researchers to look at the differences between the pharmacological activity of pure extract and extract tablets. Medicinal plants that will be used is the root of the cat (Acalypha indica Linn.) Which since 2000 continues examined usefulness both in college and medical school faculty of pharmacy. Efficacy has been shown by pre-clinically in the form of extracts, among others: Antibacterial (Gopalakrishman V, 2000), uric acid (Prihandini K, 2004), diuretic (AK Ahmed, 2005), diabetes (Rajathi MD, et al, 2011) to neuroterapi (Purwaningsih EH, et al, 2008).

One of the high prevalence of disease in the community and is a degenerative disease such as diabetes. Diabetes management can be done by lowering blood sugar levels to the normal range using the extract of the roots of plants cat.

Treatment would be more practical if it is made in tablet dosage forms, but it should be noted that the pharmacological effects of the shape of the extract did not change. Generally speaking, the stage of making the pulverizing crude drug extracts, the choice of solvent or liquid penyari, the selection process of extraction or by extraction, separation and purification, evaporation or concentration, drying the extract and extract yield determination.

Tablets are defined as solid dosage compact printing felts made in the form of flat or circular tube, the second surface is flat or convex, containing one or more types of medicine with or without material additives. Additional materials that were used can serve as fillers, binders, crushers, wetting agent, lubricant or other suitable material.

Excipients or additives contained in the tablets may affect the efficacy of the tablet, therefore in this study will be a comparison between the hypoglycemic activity of pure extracts and tablets. Cat root extract used form of stew because stew is very broad way of applications in the community. Part of plant cat root that used were covering roots, herbs and leaves, with the aim of seeing the difference on the efficacy of pharmacological plant fragments. The research is done to see the difference between the hypoglycemic activity of the root decoction extract, leaves and herbs than root tablets, extract leaves and roots of herbaceous white male cat in Swiss Webster mice. Male mice were used to negate the effects of hormonal if it using female mice.

Methanol extract of the roots of the cat showed significant diuretic activity in white mice. Maximal diuretic activity was obtained at a dose of 400 mg / kg after 5 hours with a comparison of furosemide 20 mg (AK Ahmed, 2005). Water decoction of the roots of the Acalypha indica Linn lowering blood uric acid levels equivalent allupurinol rats (Pratita A, 2004). Results of fractionation of the water extract with some solvents can lower uric acid levels in the blood of mice equivalent to allupurinol (Hartanto MD, 2006). Roots cats has also been studied have efficacy as a neuroprotective and neuro therapy (Felicia, 2009) and hypoglycemic effects (Manisha M, et. Al, 2011).

1. METHODS

This study is an experimental research (true experimental) in the field of pharmaceutical and pharmacology that require ethical clearance. The study was conducted in the Department of Pharmacy Polytechnic Jakarta II in July-September, 2013.

a. Preparation of Crude

Preparation of botanicals begins with the collection of root cat grown in East Jakarta, from the yard, vacant land and roadsides. This is a wild plant roots, so it imposible known to the exact age of the plant. To minimize differences in age of the plant, selected plant height of approximately 30-50 cm. Determination performed at Lipi Bogor plant and plants that have been collected and then made wet sorting to separate from impurities, as well as other plants, then washing thoroughly. The separation between the leaves, roots and whole plants as herbs, to get each simplisa, then each 60^{o}C dried in the oven temperature to dry and powdered with a fine mesh 20 degrees.

b. Making Root Extract Acalypha indica Linn Stew

Cat root extract made by boiling using water as a solvent. The stew is a way of extraction is often done in the wider community in cultivating medicinal plants to be consumed to maintain health or cure disease. The filtrate was then evaporated until the stew thick above the water bath at a temperature of 75-80 ° C to obtain a thick extract. Extract condensed put in the oven at 60 ° C until it becomes dry ekstak. Selection of dry extract form is intended to extract more stable on storage, because the water is covered with fungal extracts. Drying the extract is done without the addition of filler material in order to form a pure extract (native extract), which is considered as the active ingredient of the tablet extract.

c. Animal Test Preparation

Male white mice to be used first acclimatized for 1 (one) week in a cage at the Laboratory of Pharmacology Department of Pharmacy Health Polytechnic of Jakarta II. Acclimatization is the process of adaptation so that the animal can adjust to the new environment. Acclimatization animal experiments were carried out for 1 week by maintaining mice in cages, given nutrition and health monitored. Mice were otherwise qualified if the weight is not reduced by more than 10% and there are no signs of infection are physically.

d. Determination of Dose

Cat root extract dose determined based on previous studies that suggest the use of tablet dosage cat root extract 140 mg per tablet dose of 2 tablets 2x a day for 4 days of use (Junaedi, et.al, 2013). Dose per day for humans is 140 mg x 4 tablets is 560 mg, the dose for mice is 560 mg x 0.0026 = 1.456 ~ 1.5 mg / 20 g bb mice.

The dose is 1 tablet glibenclamide 5 mg for men who converted to mice to 5 mg x 0.0026 = 0.013 mg / 20 g mice.

e. Implementation of the Experiment

Based on the book of Pharmacology screening (Anonymous, 1993), in this experiment used 10 mice per treatment group so that the treatment group needed for 8 to 80 mice. Based on Federer formula adopted by Ali Hanafi (t-1) (n-1) ≥ 15, where t is the number of treatment groups and n is the number of experimental animals of each treatment. So that each treatment group is the minimum required:

(8-1) (n-1) ≥ 15
7N - 7 ≥ 15
7N ≥ 15 + 7
n ≥ 23/7 =
n ≥ 3.3

So that each treatment group used was 4 tails.

f. The treatment group

Group	Treatment	Number of mice
KN	Normal controls, were given a 0.5% tragachan suspension 0.5 mL/20 g	4
G	Comparative standard : Glibenclamide 0,013 mg/20 g mice in tragachan suspension 0.5%	4
ED	Leaf Extract A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4
EH	Herbal Extract A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4
EA	Root Extract A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4
TD	Leaf Extract A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4
TH	Tablets Herbal Extract A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4
TA	Root Extract Tablets A. indica dose of 1.5 mg/20 g mice in tragachan suspension 0.5%	4

g . Procedur

1. Mice were not feeded in 10-16 hours, starting at 18:00 pm. For treatment at 09.00 am., Drinking still be given.
2. Mice were weighed, randomly grouped, each group consisting of 4 tail.
3. Up to day-4, at 9 AM, blood not taken from the tail and measured with Accu check active (T_0). Then immediately given suitable group treatment, with all planned in 0,3 ml/20 g BB dose.
4. On the fourth day, at 09.00 take-1 from the blood into mice and measuring the accu check active (T_0). Then immediately given the appropriate treatment group, and all planned given the number 0,3ml / 20g bb
5. Hours 9:30 2nd take blood from mice and measuring the accu-check active (T_{30}) and immediately given glucose dosage of 100 mg / ml, 0.2 ml / g bb.
6. After done given glucose, blood was taken 30 minutes later and measuring the accu-check active (T_{30} pc), followed by taking blood glucose 2 hours after administration (T_{120} pc)
7. To do score averaging of the data for each treatment and make graphs the percentage of blood sugar levels at the time of each blood draw, then do the data analysis.

DATA ANALYSIS

The results of the measurement of blood glucose levels during the 4 days of observation were statistically processed using SPSS are normal and homogen. The analysis used is the normal distribution test (Test Shapiro - Wilk) and homogeneity test (Levene test), followed by a test of one-way analysis of variance (Anova). If there is a significant difference followed by Least Significant Difference Test (BNT).

4. RESULTS and DISCUSSION

Table 1. Blood sugar levels on average in each test group during 4 days administration.

Group	Blood Sugar Levels mg/dL ± SD (mg/dL)			
	T_0	T_{30}	T_{30} pc	T_{120} pc
KN	174 ± 20,38	179,25 ± 34,30	220,25 ± 28,47	131 ± 10,32
G	117,5 ± 6,1	119,75 ± 20,77	137,25 ± 21,3	68 ± 4,16
ED	105 ± 31,04	116,25 ± 32,67	130,25 ± 21,25	59,25 ± 15,01
EH	124 ± 36,19	164 ± 59,70	161 ± 34,79	110,75 ± 22,69
EA	107,5 ± 30,74	87,75 ± 19,84	115 ± 63,1	71,5 ± 12,46
TD	125,5 ± 10,33	103 ± 3,39	147 ± 11,87	80 ± 7,65
TH	116,5 ±10,52	95 ± 16,87	156,25 ± 27,29	71,5 ± 9,86
TA	133,5 ± 21,24	102,25 ± 33,48	167 ± 39,29	94 ± 39,86

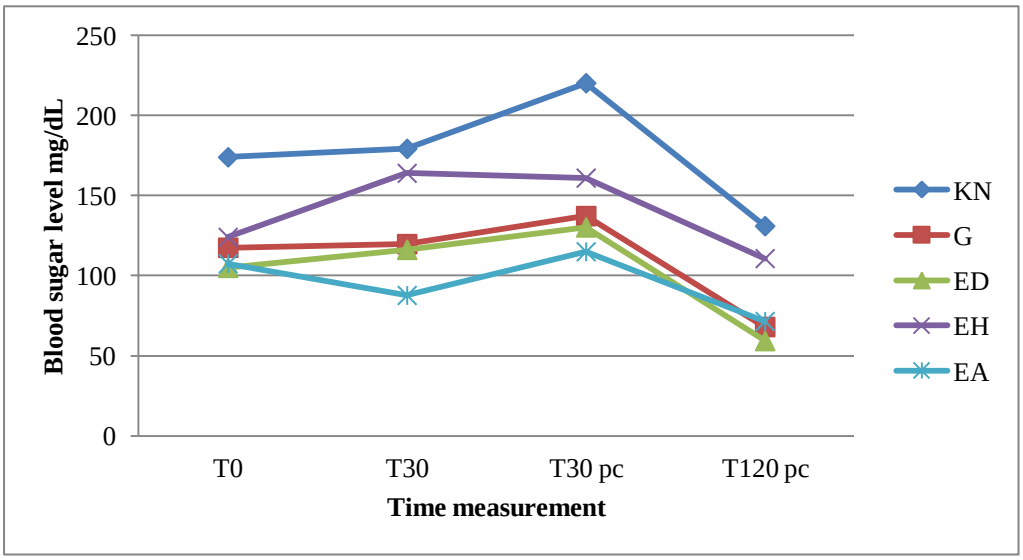

Figure 1 graphs the levels of blood sugar leaf extracts, herbs and roots compared with normal control and glibenclamide

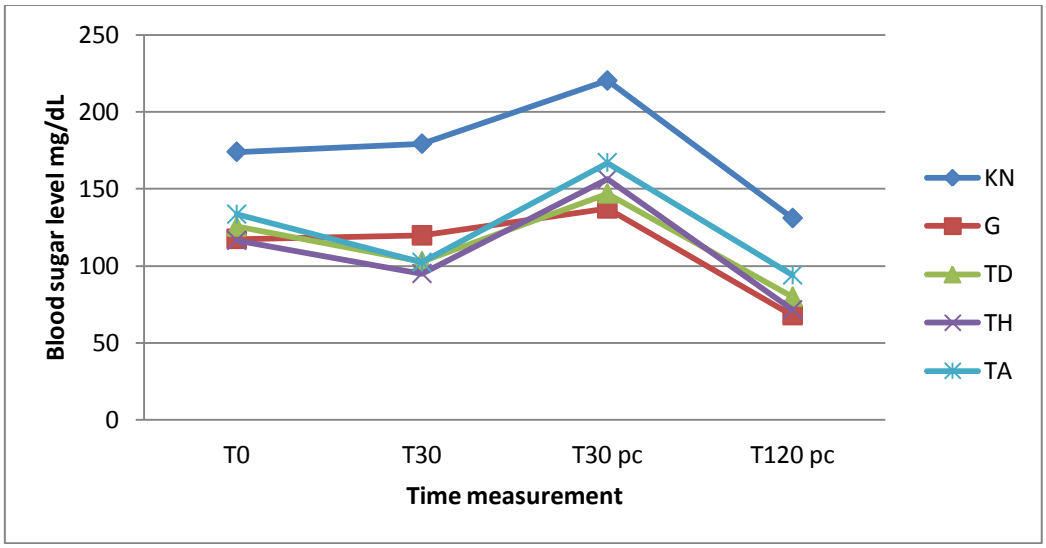

Figure 2 Graphics Tablet blood sugar leaf extracts, herbs and roots compared with normal control and glibenclamide

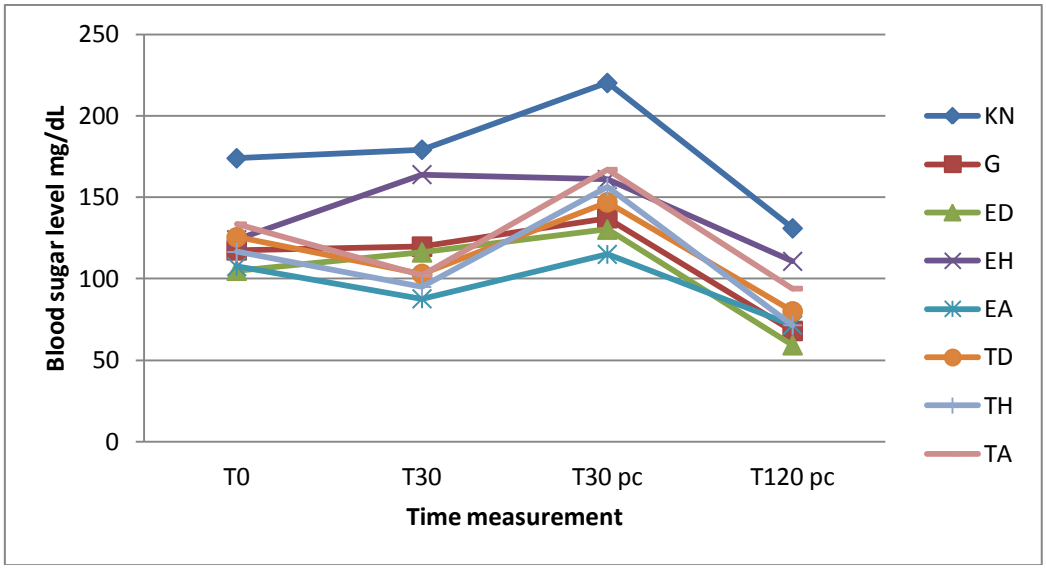

Figure 3. Graph leaf extract blood sugar, herbs and roots and leaf extract tablets, herbs and roots compared with normal control and glibenclamide

The results of measurements of blood sugar levels of mice in each experimental group showed deviation deviation data have varied. This is due to biological variations that are owned by the mice experiments, so it is not possible to obtain data on blood sugar levels with the same deviation. In experiments using animal testing, the deviation deviation of 30-50% can be tolerated.

Results of statistical analysis of blood sugar in 30 minutes after administration of the test material (T_{30}) showed that the data were not normally distributed and homogeneous, so used Kruskal - Walis. This could be due to differences in the accuracy of the amount of blood needed for measurement on acchu check tool, precision tool itself, and the amount of data that is too low and it cause deviation is quite large. The result is that there are significant differences between the groups, among others KN with G, which means glibenclamide shown to have the effect of hypoglycemia. Other groups were significantly different with the normal group is EA, TD, TH and TA.

Table 2. Test different between groups compared is KN on T_{30}

Group A	Group B	Significance	Information
Control Normal (KN)	ED	0,083	There was no difference
	EH	0,564	There was no difference
	EA	0,020	There is a difference
	TD	0,021	There is a difference
	TH	0,021	There is a difference
	TA	0,043	There is a difference

ED and EH groups did not differ significantly with the normal means hipoglikemiknya effects have not been seen. Blood sampling at this point illustrates the ability of the test material in lowering blood sugar levels of mice after 30 minutes of administration. The test group had a hypoglycemic effect is statistically significantly different to the normal

group were only given tragachan.

Results of statistical analysis of blood sugar 30 minutes after feeding (T_{30} pc) showed no significant differences between all groups. This means that the new start glibenclamide onset and has not seen a decrease in sugar levels are statistically significant. Similarly, root extract and cat extract tablets. It took more than 30 minutes to hipoglikemiknya activity appeared significantly.

Results of statistical analysis of blood sugar levels two hours after feeding (T_{120} pc) showed have significant differences between the groups, among others KN with G, ED, EA, TD, and TH. Groups did not differ significantly with that of normal control group EH and TA. This means that the extract of herbs and roots tablets have not been statistically demonstrated hypoglycemic effects, because it is not significantly different to the normal group only given tragachan. In other words, herbal extracts and extract tablets hypoglikemic's effect is longer than the leaf extract, root extract, tablets and tablets herbal leaves. It can be caused by the content of different compounds between leaf and root extracts compared with extracts of herbs.

Table 3. Test different between groups compared to KN on T_{120} pc

Group A	Group B	Significance	Information
Control Normal (KN)	ED	0,021	There is a difference
	EH	0,386	There was no difference
	EA	0,021	There is a difference
	TD	0,021	There is a difference
	TH	0,021	There is a difference
	TA	0,248	There was no difference

Results of statistical analysis of blood sugar levels two hours after feeding (T_{120} pc) between the leaf extracts, herbs and roots showed that no significant differences with p value less than 0.05, which means that H_0 is rejected. This means that the leaf extract has hypoglycemic activity better than extracts of herbs and root extracts.

Table 4. Between groups of different test extracts on T_{120} pc

Group A	Group B	Significance	Information
ED	EH	0,043	There is a difference
	EA	0,248	There was no difference
EA	EH	0,080	There was no difference

It could be caused due to the merit of the active ingredients contained in the root cat leaves more, while the more herbaceous fragments of wood and branches and roots have a different chemical content of leaves. Herba acalyphin containing cyanogenic glycosides (0.3%), 3-sianopyridon derivatives, tannins, including tri - O - metal ellagic acid, essential oils, plant sterols (β-sitosterol and δ-sitosterol acetate), β D-glycosides, akalifamid, 2 - metal Antraquinon, aurantiamid, kaempferol, N - metal 3 - and N-oktakosanol sianopyridon. The leaves contain oxalic acid, saponins, calcium, calcium oxalate, carbohydrates, fat, fiber, cyanide, iron, phosphate and protein. The part of containing alkaloids, tannins, sterols, flavonoids and cyanogenic glycosides.

Results of statistical analysis of blood sugar levels two hours after feeding (T_{120} pc) between the leaf extract tablets, and herbal extracts, tablet root extract showed that there was no significant difference between the groups, which means the tablet leaves, herbs and roots have the same hypoglycemic activity. This is in contrast with the pure extract which leaves extract has the best hypoglycemic activity.

Table 5. Test different between groups tablet extracts on T_{120} pc

Group A	Group B	Significance	Information
TD	TH	0,248	There was no difference
	TA	0,468	There was no difference
TA	TH	0,468	There was no difference

Results of statistical analysis of blood sugar levels two hours after feeding (T_{120} pc) between pure extracts and extract tablets showed that there was no difference between the extract and the tablet leaves and roots, its means pure extracts hypoglycemic activity and tablet dosage alike. While herbal extracts and herbal tablet has a significant difference

with p value of 0.043 is less than 0.05, which means that the pure extract would be better if made a tablet properties.

Hypoglycemic effect is influenced by the roots of Acalypha indica Linn chemical constituents found in plants, with identification of responsible compound for pharmacological action, can do is attempt to maintain the compound present in an amount sufficient so that in the extracts. However, the compounds responsible for the alleged efficacy is not known for certain, so it is necessary to conduct further research on the active compound must be present in the extract and set the minimum levels necessary to produce the effect.

4. CONCLUSIONS

1. Root and leaf extracts of Acalypha indica Linn root extract has hypoglycaemic activity were significantly different with the normal group, while no herbal extract.
2. Leaf extract tablets and tablets herbal extracts of Acalypha indica Linn has hypoglycaemic activity significantly different with the normal group, while the tablet is not the root.
3. Leaf extract of Acalypha indica Linn has significant hypoglycemic activity of different herbal extracts and extract the root
4. There was no significant differences in hypoglycemic activity of the leaf extract tablets, tablets and tablets herbal extracts of Acalypha indica Linn root extract. the male white mice
5. Hypoglycemic activity of different herbal extracts meaningful with herbal tablets Acalypha indica Linn., While leaf and root extracts did not.

5. REFERENCES

[1] Anonim, 2008. *Tingkat Manfaat Keamanan dan Efektifitas Tanaman Obat dan Obat Tradisional*. Balai Besar Penelitian dan Pengembangan Tanaman Obat dan Obat Tradisional. Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan RI (in Indonesia Language) .

[2] Gopalakrishnan V, 2000. *Antimicrobial Activity of Extrats of Acalypha indica Linn*, College of Pharmacy Sri Ramachandra College and Research Institute (Deemed University) Poror, Chennai – 600116

[3] Govindarajan M., et al., 2008. *Antibacterial Activity o Acalypha indica L*. European Review for Medical and Pharmacological Sciences. 12, p. 299-302.

[4] Murugan T dan Saranraj P., 2011. *Antibacterial Activity of Various Solvent Extract of The Indian Herbal Plant Acalypha indica Against Human Patogens Causing Nasocomial Infection.* International Journal of Pharmaceutical and Biological Archives: 2(5) p. 1473-1478

[5] Thenmozhi S dan Rajan S., 2012. *Screening of Antibacterial and Phytochemical Activity of Acalypha indica Linn. Against Isolated Respiratory Pathogens*. Research in Plant Biology. 2(1). p.01-06

[6] Prihandini K, 2004. *Pengaruh Pemberian Rebusan Akar Acalypha indica Linn. (Akar Kucing Secara Oral Terhadap Kadar Asam Urat Darah Tikus Putih Jantan Yang Diinduksi dengan Kafein*. Skripsi Sarjana, Departemen Farmasi FMIPA UI (in Indonesia Language) , Depok, Indonesia.

[7] Pratita A, 2004. *Pengaruh Rebusan Akar Tanaman Akar Kucing (Acalypha indica Linn.) Terhadap Kadar Asam Urat Dalam Darah pada Tikus Putih Jantan Yang Diinduksi Kalium Oksonat*. Skripsi Sarjana, Departemen Farmasi FMIPA UI (in Indonesia Language), Depok.

[8] Hartanto MD, 2006. *Pengaruh Sari Fraksi Heksana, Kloroform, Etil Asetat dan Sisa Air dari Rebusan Akar Tanaman Akar Kucing (Acalypha indica Linn.) Dosis 10,8 g/200g BB Terhadap Kadar Asam Urat Dalam Darah Tikus Putih Jantan Yang Diinduksi Kalium Oksonat*. Skripsi Sarjana, Departemen Farmasi FMIPA UI (in Indonesia Language) , Depok.

[9] Dwijayanto B, 2006. *Pengaruh beberapa Fraksi Rebusan Akar Acalypha indica Linn. Dosis Setara Akar Kucing 5,4 g/200 g BB Terhadap Kadar asam Urat Dalam Darah Tikus Putih Jantan Yang Diinduksi Kalium Oksonat*. Skripsi Sarjana. Departemen Farmasi FMIPA UI (in Indonesia Language), Depok, Indonesia.

[10] Ahmed A.K, 2005. *Diuretic Activity of Acalypha indica*. Dhaka University, Journal of Pharmaceutical Science Vo. 4 No. 1 June.

[11] Rajathi M. D, et al, 2012. *Antidiabetic and antimicrobial activity of Acalypha indica Linn. Extract*. Journal of Scientific Research in Pharmacy, 1 (3).

[12] Saha R., Ahmed A, 2011. *Hypoglycemic Effect of Acalypha indica Linn Ekxtract on Streptozotocin Induced Diabetes in Rat*. International Journal of Pharmaceutical Sciences

and Research, Vol 2, Issue 11

[13] Manisha M., et al, 2011. *Antidiabetic Activity of Acalypha indica Linn. On Normal and Alloxan Induced Diabetic Rats*. International Journal of Pharmacy and Pharmaceutical Sciences, Vol.3 (3).

[14] Ocktarini R, 2010. *Pengaruh Ekstrak Herba anting-anting (Acalypha australis L) Terhadap Kadar Glukosa Darah Mencit Balb/C Induksi Streptozotocin* (in Indonesia Language) . Skripsi Fakultas Kedokteran Sebelas Maret Surakarta, Indonesia.

[15] Purwaningsih E.H. et al, 2008. *Neuro-protection and Neuro-therapy effect of Acalypha indica Linn. Water Extract Ex Vivo on Musculus gastrocnemius Frog.* Makara Kesehatan, Vol. 12 No. 2: 71-76, Depok, Indonesia

[16] Felicia., 2009. *Efek Neuroterapi Ekstrak Air akar Acalypha indica Linn (Akar Kucing) Dosis 20 mg dan 25 mg Secara Eks Vivo Pada Saraf Otot Gastroknemius Katak*. Fakultas Kedokteran Universitas Indonesia. Jakarta, Indonesia.

[17] Junaedi, et. al., 2013. *Formulasi Tablet Ekstrak Rebusan Akar, Daunt dan Herba Akar Kucing (Acalypha indica Linn.) Dengan Metode Cetak Langsung* (in Indonesian Language) . Karya Tulis Ilmiah. Poltekkes Kemenkes Jakarta II Jurusan Farmasi, Jakarta.

[18] Anonim, 2000. *Parameter Standar Umum Ekstrak Tumbuhan Obat*. Direktorat Jendral Pengawasan Obat dan Makanan, Departemen Kesehatan Republik Indonesia Jakarta.

[19] Ansel H.C, 2005. *Pengantar Bentuk Sediaan Farmasi edisi keempat*. Penerbit Universitas Indonesia, Jakarta, Indonesia.

[20] Siregar, C, "Pharmaceutical preparations tablet technology, Practical Basics" (in Indonesian Language), pp 129-153, 163, 515, 2010.

[21] Hutapea J.R, 1993. *Inventaris Tanaman Obat Indonesia (II)*, Departemen Kesehatan Republik Indonesia, Jakarta, Indonesia.

[22] Simalango R, 2003. *Analisis Pendahuluan Kandungan Kimia Akar dan Herba Serta Pola Kromatogram Fraksi Etanol Ekstrak N – Heksana Herba Acalypha indica Linn. Yang Tumbuh di Depok*. Skripsi Sarjana, Departemen Farmasi FMIPA UI, Depok.

[23] Susanti S, 2006. *Isolasi dan Identifikasi Senyawa-senyawa Kimia Fraksi N – Heksana dan Etil Asetat dari Ekstrak Etanol Akar Tanaman Acalypha indica Linn. (Akar Kucing)*. Skripsi Sarjana, Departemen Farmasi FMIPA UI, Depok, Indoneisa.

[24] Duke J., 2006. *Phytochemical and Database*. http://www.ars-grin.gov/duke/onlinedatabase/acalypha indica L/listofchemical html.

[25] Saha R., Ahmed, A, 2011. *Phytochemical Constituent and Pharmacological activities of Acalypha indica Linn*. International Journal of Pharmacy and Pharmaceutical Sciences, Vol 2 (8) : 1900-1904

[26] Anonim, 1993, *Penapisan Farmakologi, Pengujian Fitokimia dan Pengujian Klinik*, Yayasan Pengembangan Obat Bahan Alam Phyto Medika, Jakarta, Indonesia.