

Bukti Korespondensi publikasi artikel
Indonesian Journal of Pharmacy
VOL 33 (1) 2022: 93–99

Penulis :

Nurkhasanah Mahfudh*, Muhammad Fathurrachman Mantali, and Nanik Sulistyani

Artikel disubmit pada 17 Juli 2021 dengan judul :

The Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (Ipomoea batatas L.) and Red Yeast Rice Combination on Hypercholesterol Rats

Berikut rangkuman korespondensi :

Tanggal	Korespondensi		Hal
	Author	Editor Jurnal	
17 Juli 2021	Artikel disubmit melalui sistem		
13 Desember 2021		Email dari Editor tentang permintaan revisi (lampiran 1. Bukti email dan lampiran hasil review)	2
10 Januari 2022	Perbaikan artikel diupload sebelum 10 jan 2022	Email dari Editor tentang permintaan pembayaran (lampiran 2. Bukti email)	13
25 Januari 2022		Email dari Editor tentang permintaan revisi (lampiran 3. Bukti email)	14
8 Februari 2022		Email dari Editor tentang permintaan proofreading (lampiran 4. Bukti email)	15
8 Februari 2022	Penullis menjawab email bahwa sudah dilakukan proofreading (lampiran 5 dan dokumen sertifikat proofreading)		16

Lampiran 1. Email permintaan revisi

10/18/22, 4:45 PM

Universitas Ahmad Dahlan Yogyakarta Mail - [IJP] Editor Decision

UNIVERSITAS
AHMAD DAHLAN

Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

[IJP] Editor Decision

Editorial Board IJP via Jurnal Ilmiah Universitas Gadjah Mada <no-reply@ugm.ac.id> Mon, Dec 13, 2021 at 11:17 AM
Reply-To: Editorial Board IJP <mfi@ugm.ac.id>
To: Nurkhasanah Mahfudh <nurkhasanah@pharm.uad.ac.id>, Muhammad Fathurrachman Mantali <alfaro.mantali@gmail.com>, Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

Nurkhasanah Mahfudh, Muhammad Fathurrachman Mantali, Nanik Sulistyani:

We have reached a decision regarding your submission to Indonesian Journal of Pharmacy, "Antioxidant and Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (*Ipomoea batatas* L.) and Red Yeast Rice Combination In Hypercholesterol Rats".

Our decision is: Revisions Required

Please revise the reviewer comment below:

The paper discover about the combination of purple sweet potato leaf extract and red yeast rice had antihyperlipidemic and antioxidant activity in hypercholesterol rats. However, the author should correct the manuscript before I check the whole thing.

1. Please look at the draft manuscript
2. Overall improvement or rewrite in the discussion and discussion section with the concept of synthesis writing (explain the results first then literature comparison).

Editorial Board IJP
Indonesian Journal of Pharmacy
mfi@ugm.ac.id

Indonesian Journal of Pharmacy

 **B-2115-13346-1-5-20211111.pdf**
620K

Hasil Review :

Antioxidant and Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (*Ipomoea batatas* L.) and Red Yeast Rice Combination In Hypercholesterolemia Rats

ABSTRACT

Hyperlipidemia is a condition of lipid such as cholesterol and triglycerides in the blood are high, which is the cause of other diseases. This condition also causes an increase in free radicals resulting in oxidative stress. Purple sweet potato leaves and red yeast rice have been reported to have antihyperlipidemic and antioxidant activity in several studies. This study aimed to examine the effect of the combination of purple sweet potato leaves extract and red yeast rice on cholesterol and triglyceride levels as well as MDA levels and GPx activity on rats induced by a high-fat diet. Experimental animals were randomly divided into 6 groups of 5 mice each: group 1 being the normal group; group 2 positive control; group 3 negative control; group 4 purple sweet potato leaf extract 400 mg/kg BW; group 5 red yeast rice 40 mg/kg BW; group 6 combination of purple sweet potato leaf extract 360 mg/kg BW and red yeast rice 40 mg/kg BW. Rats were treated with high-fat feed for 28 days, on day 15-28 were given oral preparations. At the end of the study, all rats were blood drawn to measure cholesterol and triglyceride levels, then rats were sacrificed and the liver was taken to measure MDA and glutathione peroxidase levels. The oral administration of purple sweet potato leaf extract, red yeast rice, and their combination significantly ($p < 0,05$) reduced cholesterol, triglyceride, and MDA levels, and increased GPx activity—~~with the best effect in the combination group~~. This finding showed that the combination of purple sweet potato leaf extract and red yeast rice had antihyperlipidemic and antioxidant activity in hypercholesterolemia rats.

Key words: Antioxidant, Antihyperlipidemic, Sweet Potato Leaf, Red Yeast Rice.

INTRODUCTION

Hyperlipidemia is a condition when abnormally high levels of lipids are found in the blood. This condition is also called hypercholesterolemia or hyperlipoproteinemia (Gupta et al., 2011). Hypercholesterolemia is a condition in which the concentration of blood cholesterol exceeds the normal level (Durrington, 2003). Hypercholesterolemia can cause changes in the physical properties of cell membranes that trigger an increase in oxygen free radicals from mitochondria. These oxygen free radicals result in the process of lipid peroxidation in cell membranes which produces peroxide radicals and other free radicals (Singh et al., 2017). This increase in free radicals can cause an imbalance of oxidants and antioxidants which is better known as oxidative stress. High levels of free radicals can cause tissue damage (Murray et al., 2009). Oxidative stress can be determined by looking at the increase in lipid peroxide in the body and determined by measuring levels of malondialdehyde (MDA).

Purple sweet potato leaves contain carotenoids which have antioxidant abilities and reduce or inhibit mutagenesis in cells, and terpenoids reduce low-density lipoprotein (LDL) cholesterol levels and act as anticarcinogens (Mohanraj & Sivasankar, 2014). Purple sweet potato leaves are also known to contain anthocyanin which also has a function as an antioxidant, so it can reduce the effects of oxidative stress which plays a role in the process of disturbances in the cardiovascular system (Reis et al., 2016). Purple sweet potato leaf extract has been studied to improve lipid

Commented [MC1]: Which one group, please mentioned

Commented [MC2]: It's better if the author writes down (in introduction) the reason why it is combined between sweet potato and red rice because the author considers this to be a novelty

Running title

profile (Sumardika & Jawi, 2012), while also having antitumor activity and lowering blood sugar levels (Zhao et al., 2013).

Red yeast rice (Angkak) is a fermented food product produced by cultivating *Monascus purpureus* into rice (Shi & Pan, 2011). The main content of Angkak is Monacolin K which can inhibit cholesterol biosynthesis in humans and animals and also contains compounds such as flavonoids, polyphenols, carotenoids, alkaloids, and vitamins as well as several secondary metabolites produced by the *Monascus* mushroom which are components composed of polyketides so that they have antioxidant activity (Chariote et al., 2009).

This study aims to examine the antioxidants effects from the combination of purple sweet potato leaves and red yeast rice in-vivo in hypercholesterol rats, to produce better effects and benefits in treating hyperlipidemia and oxidative stress.

MATERIAL AND METHODS

Extraction of purple sweet potato leaves and preparation of red yeast rice

Fresh purple sweet potato leaves were sorted and washed, then dried in an oven at 40°C. Purple sweet potato leaf extract is done by decocting 500 grams of purple sweet potato leaf powder was put into a container containing aquadest, then heated over a water-bath to a temperature of 90°C for 30 minutes. The solvent was evaporated with a vacuum rotary evaporator until it was slightly concentrated, after which it was dried using a freeze dryer. Red yeast rice is used in powder form, mashed using a blender until it becomes powder.

Animal

The experimental animals used were 30 male Wistar rats with 8 weeks old and 150-250 g weight. Male sex selection is done to reduce hormonal influences. Rats were kept in a well-ventilated room with a light cycle (12 hours light and 12 hours dark), and humidity and room temperature were maintained. Before the treatment, all experimental animals were adapted for 7 days. This research has been approved by the Ahmad Dahlan University Research Ethics Committee with the number 012009048.

Hypercholesterol induction and experimental design

To create a hypercholesterol condition, the rats were fed a high-fat diet (HFD) made with a standard feed composition of 300 g, chicken egg yolks 20 g, butter 100 g, beef fat 10 g, and propylthiouracil (PTU) 0.05 g. The feed is made into pellets by mixing all the ingredients and forming a cylinder and then in the oven to dry. High-fat diet feed was given for 14 days before sample treatment in the test and control groups, then 14 days after that the test sample was given to the test group by feeding the high-fat diet continued until the 28th day. Feed was given as much as 15 g/head/day, and water was given ad libitum during treatment to all test and control groups.

Rats were divided into 5 groups, the first group was the normal group given standard feed, negative control group was given HFD feed, positive control group was given HFD and Nutrive benecol 9 mL/kg BW 2 times a day. The treatment group was given HFD feed and purple sweet potato leaf extract 400 mg/kg BW, red yeast rice 40 mg/kg BW, and a combination of purple sweet potato extract and red yeast rice 360 mg and 40 mg/kg BW. The test preparation was dispersed first in 0.5% Na-CMC, then administered orally using a probe. On the 29th day, blood was drawn for cholesterol and triglyceride testing, then the animals were sacrificed and dissected to take their liver organs.

Commented [MC3]: In abstract, the author focuses more on writing about antihyperlipidemic activity. So, the advice is to just focus on hyperlipidemia and then link it to antioxidants

Commented [MC4]: The author must state the origin of the sweet potato and red rice taken. Is it direct from the farmer or from the market? Authors must also have a taxonomy or voucher specimen of these two plants.

Commented [MC5]: Must be defined. Suggestion: cange to extraction

Commented [MC6]: Please mention origin of materials/chemicals (company, country)

Measurement of cholesterol and triglyceride levels

Cholesterol levels were tested using the CHOD-PAP (Cholesterol Oxidase – Peroxidase Aminoantipyrin) method and triglycerides using the GPO-PAP (Glycerol Phosphate Oxidase – Para Aminophenazone) method using the diasys reagent, 10 L of blood serum plus 1 mL of reagent was blend and then incubated for 5 minutes at 37°C, then measured at the absorbance at 546 nm.

Liver homogenate preparation

Rat liver tissue was cut into small pieces, then weighed and homogenized in PBS (0.01 M, pH 7.4) on ice, with a ratio of tissue weight (g): PBS volume (mL) = 1:9. The liver tissue homogenate was then centrifuged at 3000 rpm for 10 minutes at 4°C, the supernatant was then separated and used to test MDA levels and glutathione peroxidase activity.

Measurement of MDA level

Determination of MDA levels using the elabsciens kit (E-BC-K025-S) colorimetrically according to the manufacturer's instructions. A total of 0.1 mL of liver homogenate was mixed with 0.1 mL of TBA clarivant, 3 mL of acid reagent, and 1 mL of the chromogenic agent, then incubated in a 95 water bath for 40 minutes, then cooled the tube with running water, centrifuged at 3100 g for 10 minutes. The supernatant was collected and then measured by spectrophotometer at 532 nm with a 1 cm diameter cuvette.

Measurement of glutathione peroxidase (GPx) activity

Measurement of glutathione peroxidase (GPx) activity was carried out using the elabsciens kit (E-BC-K096-S) according to the manufacturer's instructions. A total of 0.2 mL of liver homogenate added 0.2 mL of 1 mmol/L GSH, then heated the tube together with the stock solution in a 37°C water bath for 5 minutes, added 0.1 mL of stock solution in the tube, and then reacted in a 37°C water bath for 5 minutes, then 2 mL of acid reagent was added, mixed and centrifuged at 3100 g for 10 minutes. Take 1 ml of the supernatant and add 1 mL of phosphate, 0.25 mL of DTNB, and 0.05 mL of salt reagent successively, mixed and left for 15 minutes at room temperature, then measured using a spectrophotometer at 412 nm.

Statistical Analysis

The results of the measurement of anticholesterol and antioxidant activity were carried out by the Kolmogorov-Smirnov normality test and homogeneity of variance test, followed by parametric statistical methods using one-way ANOVA and followed by a post-hoc LSD test using SPSS v.22 with a 95% confidence level.

RESULT AND DISCUSSION

High-fat diet (HFD) induction

In this study, to induce hyperlipidemic, a high-fat diet was used which was made from a mixture of standard feed, beef fat, butter, eggs, and Propylthiouracil (PTU). Beef fat, butter, and eggs are animal fats that contain saturated fatty acids that can be used to increase cholesterol levels. Beef fat can increase cholesterol levels based on cholesterol content of 9.5 g / 10 g ingredients that can make mice experience dyslipidemia (Furi & Wahyuni, 2011). Propylthiouracil (PTU) is an antithyroid drug that can treat high thyroid levels in the blood so that its effect causes hypothyroidism. Hypothyroidism affects lipoprotein metabolism by reducing the number of LDL

Commented [MC7]: In syhntesis writing concept, Authors must write down their results first before teory or previous study.

Commented [MC8]: Please rephrase to clarify

receptors, resulting in an increase in LDL in the blood and cholesterol formation (Fajaryanti et al., 2016). In this study, it can be seen that there was an increase in cholesterol and triglyceride levels in the negative group compared to the normal group (table 1).

Increased cholesterol also affects the balance between oxidants and antioxidants so that it can cause oxidative stress which is characterized by increased levels of MDA. The negative group given HFD showed a significant increase in MDA levels and a decrease in GPx activity when compared to the normal group (figure 1 & figure 2). Increased levels of MDA in animals fed a high cholesterol diet have been previously reported, there is a positive correlation between plasma total cholesterol and triglyceride concentrations to free radical formation (Hassan et al., 2011).

Cholesterol and triglyceride levels

In the positive control group given nutritive benecol preparations were shown to reduce cholesterol levels but could not significantly reduce triglyceride levels compared to negative controls (table 1), this is following the claim. Nutrive benecol is a yogurt drink with Plant Stanol Ester (PSE) added which can lower cholesterol levels, a clinical trial with a double-blind randomized placebo-controlled trial conducted on the Indonesian population showed that nutritive benecol containing plant stanol ester 1.7 g is equivalent to plant stanol 1 g can reduce total cholesterol and LDL cholesterol but cannot significantly reduce triglyceride levels in people with high cholesterol levels (Lestiani et al., 2018).

Purple sweet potato leaf extract showed a decrease in cholesterol and triglycerides close to the normal group (table 1), this is consistent with the previous study, where purple sweet potato leaf extract was able to significantly reduce cholesterol and triglyceride levels and had a protective effect on the rat liver against damage from high-fat diets induction (Mahfudh et al., 2021). Purple sweet potato extract contains flavonoids that work by inhibiting cholesterol absorption, increasing bile excretion, and inhibiting HMG-CoA. The inhibition of HMG-CoA will be converted to mevalonate with the help of the HMG-CoA reductase enzyme so that the flavonoids will bind to the HMG-CoA reductase enzyme. Then flavonoids as inhibitors can cause mevalonic acid to decrease, inhibition of these enzymes will inhibit the formation of cholesterol in the liver (Lairin Djala et al., 2016). Flavonoids such as quercetin and anthocyanins will also inhibit the activity of the enzyme acetyl-CoA carboxylase, this enzyme functions in the synthesis of fatty acids, and consequently, the synthesis of triglycerides will be inhibited along with the enzyme diacylglycerol acyltransferase (DGAT). Inhibition of the DGAT enzyme causes the 1,2-diacylglycerol reaction not to occur into triacylglycerol or triglycerides so that triglyceride synthesis will be inhibited and result in a decrease in triglyceride levels (Elias, 2014).

The same results were also seen in the red yeast rice group which showed a decrease in cholesterol and triglyceride levels compared to the negatives group. Giving red yeast rice can reduce total cholesterol levels in rats fed high-fat diets (Bunnoy et al., 2015; Kasim et al., 2012). Several clinical trials have documented the efficacy of red yeast rice in lowering total cholesterol, low-density lipoprotein cholesterol (LDL-C), and triglycerides (TG) (Gordon & Becker, 2011). Red yeast rice is known to be able to reduce triglyceride levels by about 13 to 44% (Shamim et al., 2013). Red yeast rice contains Monacolin K, which is produced by *Monascus sp.*, which can inhibit cholesterol biosynthesis through inhibition of HMG-CoA reductase enzyme activity. The inhibition of this enzyme was due to the homology between the structure of monacolin K (statin),

hydroxy acid, and HMG-CoA (Bunnoy et al., 2015). In comparison, the combination group of purple sweet potato leaf extract and red yeast rice showed the highest reduction in both cholesterol and triglyceride levels compared to the single groups, the cholesterol levels obtained were even lower than the normal group but statistically not different ($p > 0.05$). This shows that combining the two ingredients can result in a better reduction in cholesterol and triglyceride levels.

Antioxidant activity

Oxidative stress is a phenomenon resulting from hypercholesterolemia (Lassoued et al., 2014). Following the data obtained, it was shown that hypercholesterolemia was associated with decreased antioxidant status, increased Malondialdehyde (MDA) levels, and decreased glutathione peroxidase (GPx) activity. On the other hand, improvement in cholesterolemia is accompanied by improvement in this status.

Purple sweet potato leaf extract has antioxidant activity with an increase in GPx activity and a decrease in MDA levels (Figures 1 and 2) following the previous study, which showed a significant increase in GPx enzyme activity in rats fed a high-fat diet (Safira, 2021). Purple sweet potato leaves contain the flavonoid quercetin which has antioxidant activity. The antioxidant mechanism in flavonoid compounds is by directly capturing free radicals, preventing the regeneration of free radicals, and indirectly increasing the antioxidant activity of cellular antioxidant enzymes (Akhlaghi & Bandy, 2009). In addition, polyphenols contained in sweet potato leaves can increase glutathione levels by facilitating the expression of γ -glutamylcysteine synthetase (Moskaug et al., 2005).

Red yeast rice is also able to improve this antioxidant profile. Monacholine K (lovastatin) contained in red yeast rice can activate antioxidant systems, one of which is GPx, and reduce hydrogen peroxide (H_2O_2) (Kasim et al., 2012). Glutathione peroxidase is an important intracellular antioxidant enzyme that breaks down H_2O_2 in water and lipid peroxides in alcohols accordingly. Enzymes play an important role in inhibiting lipid peroxidation processes and, therefore, protecting cells from oxidative stress (Francenia Santos-Sánchez et al., 2019). Antioxidants play a role in neutralizing free radicals by donating an electron to free radicals and reducing their capacity to damage. These antioxidants delay or inhibit cellular damage mainly through their free radical scavenging property (Lobo et al., 2010).

The combination group of purple sweet potato leaf extract and red yeast rice was able to improve MDA and GPx levels the best among the treatment groups and close to the normal group. The results of this study showed that the combination of purple sweet potato extract and red yeast rice had anticholesterol and antioxidant activity against hypercholesterolemic rats with better activity than the single ingredient.

CONCLUSION

The combination of purple sweet potato leaf extract has antihyperlipidemic activity by lowering total cholesterol and triglyceride levels and has antioxidant activity by lowering malondialdehyde (MDA) levels and increasing glutathione peroxidase (GPx) antioxidant enzymes. This effect is better when compared to purple sweet potato leaf extract or red yeast rice only.

REFERENCES

- Akhlaghi, M., & Bandy, B. (2009). Mechanisms of flavonoid protection against myocardial ischemia-reperfusion injury. In *Journal of Molecular and Cellular Cardiology*. <https://doi.org/10.1016/j.yjmcc.2008.12.003>
- Bunnoy, A., Saenphet, K., Lumyong, S., Saenphet, S., & Chomdej, S. (2015). *Monascus purpureus*-fermented Thai glutinous rice reduces blood and hepatic cholesterol and hepatic steatosis concentrations in diet-induced hypercholesterolemic rats. *BMC Complementary and Alternative Medicine*. <https://doi.org/10.1186/s12906-015-0624-5>
- Chariote, E., Chairote, G., & Lumyong. (2009). Red yeast rice prepared from Thai glutinous rice and the antioxidant activities. *Chiang Mai J Sci*, 39(1), 42–49.
- Durrington, P. (2003). Dyslipidaemia. *Lancet (London, England)*, 362(9385), 717–731. [https://doi.org/10.1016/S0140-6736\(03\)14234-1](https://doi.org/10.1016/S0140-6736(03)14234-1)
- Elias, A. (2014). *The Effect of psidium guajava leaf Extract on Blood Pressure in Guinea Pigs, and Weight, Lipid Profiles and Serum Liver Enzymes in Fructose Fed Swiss Albino Mice* [Thesis, Addis Ababa University]. <http://localhost:80/xmlui/handle/123456789/2108>
- Fajaryanti, N., Nurrochmad, A., & Fakhrudin, N. (2016). Evaluation of antihyperlipidemic activity and total flavonoid content of *Artocarpus altilis* leaves extracts. *International Journal of Pharmaceutical and Clinical Research*, 8(5), 461–465.
- Francenia Santos-Sánchez, N., Salas-Coronado, R., Villanueva-Cafiongo, C., & Hernández-Carlos, B. (2019). Antioxidant Compounds and Their Antioxidant Mechanism. *Antioxidants*, 1–28. <https://doi.org/10.3390/antiox80505270>
- Furi, P. R., & Wahyuni, A. S. (2011). Pengaruh Ekstrak Etanol Jamur Lingzhi (*Ganoderma lucidum*) Terhadap Kadar HDL (High Density Lipoprotein) Pada Tikus Dislipidemia. *Pharmakon*, 12(1), 1–8.
- Gordon, R. Y., & Becker, D. J. (2011). The role of red yeast rice for the physician. *Current Atherosclerosis Reports*, 13(1), 73–80. <https://doi.org/10.1007/s11883-010-0145-0>
- Gupta, A., Sehgal, V., & Mehan, S. (2011). HYPERLIPIDEMIA: An Updated Review. *International Journal of Biopharmaceutical & Toxicological Research*, 1(1), 81–89. <https://www.ijbtronline.com>
- Hassan, S., El-Twab, S. A., Hetta, M., & Mahmoud, B. (2011). Improvement of lipid profile and antioxidant of hypercholesterolemic albino rats by polysaccharides extracted from the green alga *Ulva lactuca* Linnaeus. *Saudi Journal of Biological Sciences*, 18(4), 333–340. <https://doi.org/10.1016/j.sjbs.2011.01.005>
- Kasim, E., Triana, E., Yulinery, T., & Nurhidayat, N. (2012). Pengaruh angkak hasil fermentasi beras oleh *Monascus purpureus* JMBa terhadap aktivitas antioksidan dan Galur Sprague Dawley. *Berita Biologi*, 11(2), 177–185.
- Lairin Djala, F., Lyrawati, D., & Soeharto, S. (2016). Ekstrak Daging Putih Semangka (*Citrus vulgaris*) Menurunkan Kolesterol Total dan Aktivitas Hidroksi-Metilglutamil-KoA Reduktase Tikus Hiperkolesterolemia. *Jurnal Kedokteran Brawijaya*. <https://doi.org/10.21776/ub.jkb.2016.029.02.2>
- Lassoued, I., Trigui, M., Ghilissi, Z., Nasri, R., Jamoussi, K., Kessiss, M., Sahnoun, Z., Rebal, T., Boualga, A., Lamri-Senhadj, M., Nasri, M., & Barkia, A. (2014). Evaluation of hypocholesterolemic effect and antioxidant activity of Boops boops proteins in cholesterol-fed rats. *Food and Function*, 5(6), 1224–1231. <https://doi.org/10.1039/c3fo60705d>

- Lestiani, L., Chandra, D. N., Laitinen, K., Ambarwati, F. Di., Kuusisto, P., & Lukito, W. (2018). Double-Blind Randomized Placebo Controlled Trial Demonstrating Serum Cholesterol Lowering Efficacy of a Smoothie Drink with Added Plant Stanol Esters in an Indonesian Population. *Cholesterol*, 2018. <https://doi.org/10.1155/2018/4857473>
- Lobo, V., Patil, A., Phatak, A., & Chandra, N. (2010). Free radicals, antioxidants and functional foods: Impact on human health. In *Pharmacognosy Reviews*. <https://doi.org/10.4103/0973-7847.70902>
- Mahfudh, N., Sulistyani, N., Syakbani, M., & Dewi, A. C. (2021). The antihyperlipidemic and hepatoprotective effect of Ipomoea batatas L. leaves extract in high-fat diets rats. *International Journal of Public Health Science*, 10(3), 558–564. <https://doi.org/10.11591/ijphs.v10i3.20777>
- Mohanraj, R., & Sivasankar, S. (2014). Sweet potato (Ipomoea batatas [L.] Lam) - A valuable medicinal food: A review. *Journal of Medicinal Food*, 17(7), 733–741. <https://doi.org/10.465/jmf.2013.2818>
- Moskaug, J. O., Carlsen, H., Myhrstad, M. C. W., & Blomhoff, R. (2005). Polyphenols and glutathione synthesis regulation. *The American Journal of Clinical Nutrition*, 81(1 Suppl), 277–283. <https://doi.org/10.1093/ajcn/81.1.277s>
- Murray, R., Granner, & Rodwell. (2009). *Biokimia Harper (Brahm U. Pendit, et al, penerjemah)*. (Ed ke-27). Jakarta : Penerbit Buku Kedokteran EGC.
- Reis, J. F., Monteiro, V. V. S., Souza Gomes, R., Carmo, M. M., Costa, G. V., Ribera, P. C., & Monteiro, M. C. (2016). Action mechanism and cardiovascular effect of anthocyanins: A systematic review of animal and human studies. In *Journal of Translational Medicine* (p. 315). <https://doi.org/10.1186/s12967-016-1076-5>
- Safira, T. I. (2021). *Aktivitas Antioksidan Ekstrak Etanol Daun Ubi Jalar Ungu (Ipomoea batatas L) Terhadap Aktivitas Glutathione Peroksida (GPx) dan Kadar Malondialdehid (MDA) Pada Tikus Yang Diberi Diet Lemak Tinggi*. Thesis, Universitas Ahmad Dahlan.
- Shamim, S., Al Badarin, F. J., DiNicolantonio, J. J., Lavie, C. J., & O'Keefe, J. H. (2013). Red yeast rice for dyslipidemia. *Missouri Medicine*, 110(4), 349–354.
- Shi, Y. C., & Pan, T. M. (2011). Beneficial effects of Monascus purpureus NTU 568-fermented products: A review. In *Applied Microbiology and Biotechnology*. <https://doi.org/10.1007/s00253-011-3202-x>
- Singh, U. N., Kumar, S., & Dhakal, S. (2017). Study of Oxidative Stress in Hypercholesterolemia. *International Journal of Contemporary Medical Research*, 4(5), 1204–1207.
- Sumardika, I., & Jawi, I. (2012). Water Extract of Sweet Potato Leaf Improved Lipid Profile and Blood SOD Content of Rats With High Cholesterol Diet. *Medicina*, 43(2). <https://ojs.unud.ac.id/index.php/medicina/article/view/5053>
- Zhao, J. G., Yan, Q. Q., Lu, L. Z., & Zhang, Y. Q. (2013). In vivo antioxidant, hypoglycemic, and anti-tumor activities of anthocyanin extracts from purple sweet potato. *Nutrition Research and Practice*, 7(5), 359–365. <https://doi.org/10.4162/nrp.2013.7.5.359>

TABLE AND FIGURE

Table 1. The average of Cholesterol & Triglycerides levels of high-fat diet rats treated with the combination of sweet potato leaf extract and red yeast rice

Groups	Cholesterol level (mg/dL)	Triglycerides level (mg/dL)
--------	---------------------------	-----------------------------

Running title

Normal	76.643±13.172 *	154.462±44.046 *
Positive Control	82.797±13.921 *	246.154±40.580
Negative Control	105.035±12.425	265.641±38.655
Purple sweet potato leaf extract (400 mg/kg BW)	83.392±12.937 *	152.308±43.389 *
Red yeast rice (40 mg/kg BW)	83.636±18.446 *	209.026±48.310 *
Combination of sweet potato leave extract & red yeast rice (360 & 40 mg/kg BW)	75.874±12.159 *	147.949±22.019 *

Notes: * significantly different with the negative control group (p<0,05)

Figure 1. Malondialdehyde (MDA) Level of high-fat diet rats treated with the combination of sweet potato leaf extract and red yeast rice. * significantly different with the negative control group (p<0,05)

Running title

Normal	76.643±13.172 *	154.462±44.046 *
Positive Control	82.797±13.921 *	246.154±40.580
Negative Control	105.035±12.425	265.641±38.655
Purple sweet potato leaf extract (400 mg/kg BW)	83.392±12.937 *	152.308±43.389 *
Red yeast rice (40 mg/kg BW)	83.636±18.446 *	209.026±48.310 *
Combination of sweet potato leave extract & red yeast rice (360 & 40 mg/kg BW)	75.874±12.159 *	147.949±22.019 *

Notes: * significantly different with the negative control group (p<0,05)

Figure 1. Malondialdehyde (MDA) Level of high-fat diet rats treated with the combination of sweet potato leaf extract and red yeast rice. * significantly different with the negative control group (p<0,05)

Lampiran 2. Email dari Editor tentang permintaan pembayaran

10/18/22, 4:51 PM

Universitas Ahmad Dahlan Yogyakarta Mail - [IJP] Editor Decision

UNIVERSITAS
AHMAD DAHLAN

Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

[IJP] Editor Decision

Editorial Board IJP via Jurnal Ilmiah Universitas Gadjah Mada <noreply-ojs3@ugm.ac.id> Mon, Jan 10, 2022 at 2:48 PM
Reply-To: Editorial Board IJP <mfi@ugm.ac.id>
To: Nurkhasanah Mahfudh <nurkhasanah@pharm.uad.ac.id>, Muhammad Fathurrachman Mantali <alfaro.mantali@gmail.com>, Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

Nurkhasanah Mahfudh, Muhammad Fathurrachman Mantali, Nanik Sulistyani:

We are pleased to confirm that your manuscript entitled Indonesian Journal of Pharmacy, Indonesian Journal of Pharmacy, "Antioxidant and Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (Ipomoea batatas L.) and Red Yeast Rice Combination In Hypercholesterol Rats".

However, please make payment to MANDIRI UGM Branch (Account holder: UGM.FA. KAF PENERIMAAN LANGGANAN JURNAL No. VA: 8888803014100003) amount 200\$ or IDR 2.800.000 before we could send you the official letter of acceptance.

Thank you very much for submitting your manuscript to the Indonesian Journal of Pharmacy

Editorial Board IJP
Indonesian Journal of Pharmacy
mfi@ugm.ac.id

Indonesian Journal of Pharmacy

<https://mail.google.com/mail/u/5/?ik=6d3ec49567&view=pt&search=all&permmsgid=msg-f%3A1721553027144044806&simpl=msg-f%3A1721553027...> 1/1

Lampiran 3. Email dari Editor tentang permintaan revisi

10/18/22, 4:52 PM

Universitas Ahmad Dahlan Yogyakarta Mail - [IJP] Editor Decision

UNIVERSITAS
AHMAD DAHLAN

Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

[IJP] Editor Decision

Editorial Board IJP via Jurnal Ilmiah Universitas Gadjah Mada <noreply-ojs3@ugm.ac.id> Tue, Jan 25, 2022 at 2:03 PM
Reply-To: Editorial Board IJP <mfi@ugm.ac.id>
To: Nurkhasanah Mahfudh <nurkhasanah@pharm.uad.ac.id>, Muhammad Fathurrachman Mantali <alfaro.mantali@gmail.com>, Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

Nurkhasanah Mahfudh, Muhammad Fathurrachman Mantali, Nanik Sulistyani:

We have reached a decision regarding your submission to Indonesian Journal of Pharmacy, "Antioxidant and Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (*Ipomoea batatas* L.) and Red Yeast Rice Combination In Hypercholesterol Rats".

After we check similarity your manuscript score upper 20%, so you must paraphrase your article until similarity under 20%

Editorial Board IJP
Indonesian Journal of Pharmacy
mfi@ugm.ac.id

Indonesian Journal of Pharmacy

 **B-2115-13346-1-5-20211111.pdf**
620K

<https://mail.google.com/mail/u/5/?ik=6d3ec49567&view=pt&search=all&permmsgid=msg-f%3A1722909189821007449&simpl=msg-f%3A1722909189...> 1/1

Lampiran 4.

10/18/22, 4:54 PM

Universitas Ahmad Dahlan Yogyakarta Mail - [IJP] Editor Decision and Asking Proofreading

UNIVERSITAS
AHMAD DAHLAN

Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

[IJP] Editor Decision and Asking Proofreading

Editorial Board IJP via Jurnal Ilmiah Universitas Gadjah Mada <noreply-ojs3@ugm.ac.id> Tue, Feb 8, 2022 at 12:02 PM
Reply-To: Editorial Board IJP <mfi@ugm.ac.id>
To: Nurkhasanah Mahfudh <nurkhasanah@pharm.uad.ac.id>, Muhammad Fathurrachman Mantali <alfaro.mantali@gmail.com>, Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

Dear Mr/Mrs Nurkhasanah Mahfudh, Muhammad Fathurrachman Mantali, Nanik Sulistyani

Thank you for working with us for the paper, "Antioxidant and Antihyperlipidemic Effect of Purple Sweet Potato Leaf Extract (*Ipomoea batatas* L.) and Red Yeast Rice Combination In Hypercholesterol Rats," the editing of your submission is complete. We are pleased inform you that your manuscript has been completed and it was accepted for publication. In order to improve the clarity of the manuscript, we required the author to seek help for professional proofreading service before we are able to proceed the manuscript to the next step. Please email to us the proofreading version and proofreading certificate of the manuscript.

Regards
Editorial Board IJP
Indonesian Journal of Pharmacy
mfi@ugm.ac.id

Indonesian Journal of Pharmacy

<https://mail.google.com/mail/u/5/?ik=6d3ec49567&view=pt&search=all&permmsgid=msg-f%3A1724169884386024729&simpl=msg-f%3A1724169884...> 1/1

Lampiran 5.

10/18/22, 4:55 PM

Universitas Ahmad Dahlan Yogyakarta Mail - [IJP] Editor Decision and Asking Proofreading

UNIVERSITAS
AHMAD DAHLAN

Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

[IJP] Editor Decision and Asking Proofreading

Nurkhasanah Mahfudh <nurkhasanah@pharm.uad.ac.id>

Tue, Feb 8, 2022 at 12:10 PM

To: Editorial Board IJP <mfi@ugm.ac.id>

Cc: Muhammad Fathurrachman Mantali <alfaro.mantali@gmail.com>, Nanik Sulistyani <nanik.sulistyani@pharm.uad.ac.id>

Dear Editor

We have proofread the manuscript.
The certificate of proofreading has been sent along the revised manuscript in the previous e-mail.
We sent again the certificate in this email attachment.

regards

[Quoted text hidden]

--

Dr. Nurkhasanah, M.Si. Apt
Fakultas Farmasi Universitas Ahmad Dahlan
Jl. Prof Soepomo, Janturan, Yogyakarta

UNIVERSITAS AHMAD DAHLAN

Kampus 1: Jln. Kapas No. 9 Yogyakarta

Kampus 2: Jl. Pramuka 42, Sidikan, Umbulharjo, Yogyakarta 55161

Kampus 3: Jl. Prof. Dr. Soepomo, S.H., Janturan, Warungboto, Umbulharjo, Yogyakarta 55164

Kampus 4: Jl. Ringroad Selatan, Yogyakarta

Kampus 5: Jl. Ki Ageng Pemanahan 19, Yogyakarta

Kontak

Email: info@uad.ac.id

Telp. : (0274) 563515, 511830, 379418, 371120

Fax. : (0274) 564604



Editorial Certificate.pdf

180K



Editorial Certificate

DATE ISSUED: 3 February 2022

No. 1179/N/2022

This is to certify that the document listed below
has been proofread-edited by one or more editors at Prosemanatic - Proofreading and Editing Service

Manuscript Title

*The Antihyperlipidemic Effect of Purple Sweet Potato Leaf
Extract (*Ipomoea batatas* L.) and Red Yeast Rice Combination on Hypercholesterol Rats*

Chief Editor,

A handwritten signature in black ink, appearing to read "Ardian Wahyu Setiawan".

Dr. Ardian Wahyu Setiawan, MEd. (EdD).

Neither the research content nor the authors' intentions were altered in any way during the editing process. Authors have the ability to accept or reject our suggestions and changes. If you have any questions or concerns regarding the edited document, please contact Prosemanatic - Proofreading and Editing Service at prosemanatic@gmail.com.

Please note that Prosemanatic is an editing service only, and using the service will in no way guarantee that your manuscript will be selected for peer review or accepted for publication. Journal editors independently assess manuscripts submitted for publication based on the quality and appropriateness of a manuscript for the journal.