

THE BENEFITS OF *LABISIA PUMILA* FOR WOMEN: A LITERATURE REVIEW

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ABSTRACT

Objective: Traditionally, *Labisia Pumila* plant decoction was consumed for labor induction but, there is not enough scientific evidence about its safety. Although many studies have explained the benefits of *labisia pumila* for the life cycle of women. For this reason, understanding the possible benefits of *Labisia Pumila* in the scientific life cycle of women's evidence is very important. In this review, the author will discuss various studies that can explain the benefits of *labisia pumila* in a woman's life cycle. **Method:** The author searched databases including PubMed, EMBASE, and CINAHL to find out potential studies that meet the requirements. The keywords used include: '*Labisia pumila* 'OR' *labisia pumila* and woman *labisia pumila* and its benefits' OR 'kacip fatimah' OR 'rumput fatimah'. This search was conducted from February to March 2019. **Result:** Twelve (12) articles were included and reported the benefits of *Labisia Pumila* consisting of phenolic compounds, flavonoids, saponins, alkenyl, benzoquinone, natural estrogen or phytoestrogenic. In vitro study showed that ethanol extract from the root of *L. pumila* var increased the secretion of alkaline phosphatase. **Conclusion:** *Labisia Pumila* has many phytochemical benefits such as antioxidant, antimicrobial, anti-inflammatory, and can replace estrogen replacement therapy (ERT).

Keywords: *Labisia Pumila*, review, *labisia pumila* for women

1. Introduction

Indonesia is the second richest country in the world in terms of biodiversity. There are around 30,000 types (species) of plants that have been identified and 950 of them are known to have biopharmacological functions, which have potential as medicine, food, and health. One of the most used by Indonesian and Malaysian women is *labisia pumila labisia pumila* (rumput fatimah / kacip fatimah) *abisia pumila* var *alata* (*L. pumila*) a plant from the family Myrsinaceae (Intan Idiana *et al.*, 2014). Traditionally, root decoction or all *labisia pumila* plants are consumed by Malay women for labor induction, however, there is not enough scientific evidence regarding safety, usage dosage and the mechanism underlying this effect in facilitating labor. so that many medical personnel forbid their use because fears will result in atonia uteri or rupture uteri (Nani, 2010).

Previous research has proven the effect of *labisia pumila* included increasing libido, reducing the risk of dyslipidemia, improving the serum lipid profiles, antioxidant, antiinflammatory, phytoestrogenic, skin collagen synthesis, and can play a role in the menopause process (Chua *et al.*, 2012;Intan Idiana *et al.*, 2014; Dianita *et al.*, 2016). Therefore, the demand for *L. pumila* products continues to increase, mainly due to the public's new interest in herbal medicines. Thus understanding the possible benefits of *Labisia Pumila* in the scientific life cycle of women's evidence is very important. In this review, the author will discuss various studies that can explain the benefits of *labisia pumila* in the life cycle of women.

2. Materials and Method

The author searches databases including PubMed, EMBASE, and CINAHL to find out potential studies that meet the requirements. This review reported articles that published from 2000 until 2019. The keywords used include: 'Labisia pumila 'OR' labisia pumila and woman abis labisia pumila and its benefits' OR 'kacip fatimah' OR 'rumpat fatimah'.

This search was conducted from February to March 2019, the criteria for the articles included in this review were: clinical trials in humans, clinical trials in animal testing, laboratory tests, case studies, reviews, system review, and meta-analysis. The study was conducted with a quasi-experimental, study protocol or pilot study. Articles published in Arabic, Spanish, Chinese, French and Russian. Comparative measures are normal delivery, vacuum extraction or forcep extraction

3. Results

The final result of the review found 58 after the exclusion process there were 12 articles included. The article reports the results of laboratory analysis and a review of the benefits of spumia pumila as follows:

3.1. Phytochemical, Teratogenicity, and Female Reproductive Toxicity of Aqueous Extract

In vitro and in vivo studies conducted by (Norhanisah *et al.*, 2013) reported bioactive phytochemical constituents consisting of phenolic compounds, flavonoids, saponins, alkenyl and benzoquinone, which function as follows:

3.1.1 Antioxidant and anti-inflammatory

Phenolic is a compound that has antioxidant potential, phenolic acid can be easily absorbed by the digestive system and can be useful as an anti-aging compound. Based on research (Mohamad, Mahmood and Mansor, 2009) there are phenolic levels ranging from 2.53 - 2.55 mg / g in various varieties of *L. pumila*. Flavonoids or polyphenols, have the potential as antiviral, anti-allergic, anti-platelet, anti-inflammatory and anti-diarrhea and anti-tumor (Proestos and Komaitis, 2006). Iavanoid concentration in *L. pumila* variance *pumila* is higher than var. *alata* and var. *lanceolata* (Karimi, Jaafar and Ahmad, 2011).

Saponins have medicinal properties including hypocholesterolemia, anticarcinogenic, anti-inflammatory, antimicrobial and antioxidant activities (Karimi, Jaafar

and Ahmad, 2011). In the roots, leaves and stems of *L. pumila* var *alata* there is one saponin compound in the form of triterpenoid, Ardisicrenoside B and ardisiacrispin A, 3-O- which functions as anti-bacterial, anti-neoplastic and anti-cancer properties (Petronellia, Pannitterib and Testaa, 2009; Faizal and Geelen, 2013).

3.1.2. Antimicrobial

The resorcinol alkenyl identified in the *L. pumila* plant includes groups (Z) -5- (pentadec-4-enyl) -resorcinol, (Z) -5- (pentadec-8-enyl) -resorcinol and (Z) -5- (pentadec10-enyl) -resorcinol which has been reported based on useful epidemiological studies in the treatment of gastrointestinal cancer and cardiovascular disease (Shuid *et al.*, 2011). Meanwhile, benzoquinone derivatives in the leaves and roots of *L. pumila* have anti-bacterial benefits (Kim *et al.*, 2010).

Dosage range study to assess the teratogenic potential of *L. pumila* var *alata* water extract carried out in pregnant Sprague Dawley rats, with a dose of 0 (control), 2, 20, 200, 400, 1000 mg / kg / days, starting from the 6th day to the 16th day of pregnancy and sacrificed on the 21st day. There is no significant effect except changes in maternal weight in low dose extract (2 mg / kg / day).

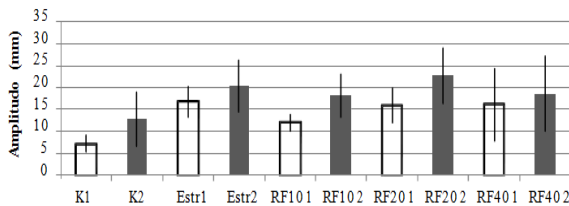
However, statistically. Gravid uterine weight, number of corpora lutea, number of implantation sites, percentage of fetal resorption, number of live fetuses, fetal weight and fetal sex ratio showed no significant differences. This result concludes that the *Labisia pumila* var water extract. statistically up to 1000 mg / kg / day statistically did not show a significant teratogenic or toxicity effect (Wan Ezumi Mohd *et al.*, 2005; Amrah *et al.*, 2009).

3.2. The benefits and effects of *labisia pumila* in the female reproductive cycle

3.2.1 Changes in the amplitude of uterine contractions

Labisia pumila is a natural material that contains natural estrogen or phytoestrogenic and has activities containing estrogen As natural estrogens, Calcium membrane grass plants are also able to increase connexin 43 synthesis and the formation of gap links (gap junction) in the myometrium which is indispensable in intracellular communication and also stimulates the production of prostaglandins F2 α and E2 which stimulate contraction of the uterus (Heinrich, 2002).

Previous study was conducted on experimental animals, namely female Sprague Dawley rats, with rat body weight 150-250 grams aged 10-14 weeks in the estrus phase (state physiology of female animals ready to accept marriage with males), subjects can become 5 groups that received oral using a pipette namely group 1 were a control group (given plarut water), group 2 (given estradiol), group 3 (given 10 grams of rumput fatimah (*labisia pumila*) root decoction, group 4 (given fatima grass soaking water 20 grams) and group 5 (give fatima grass immersion water 40 grams) as presented in figure 1 (Nani, 2010).



Note : K = control group; Estr = estradiol group; RF= Rumput fatimah (*labisia pumila*)

Figure 1. Changes in the amplitudo of uterus contraction

Nani, (2010) reported that *labisia pumila* group was given a 20 gram concentration of grass water soaked in 350 cc of water with temperature initial 70°C shows an increase response of uterine muscles to oxytocin stimulation. *Labisia pumila* is a natural ingredient that contains natural or phytoestrogenic estrogen. *Labisia pumila* may increase the number of oxytocin receptors and α -adrenergic agents that modulate the channel of calcium membrane.

3.2.2. Treatment Effects Of Osteocalcin Serum And Deoxyiridinolin Urin In Post Ovariectomic Rats

Previous Research conducted in the Pharmacology and Physiology laboratory of the medical Faculty University of Brawijaya Malang, East Java. Using ovariectomy rats showed a decreased in serum osteocalcin and an increased in urine deoxypyridinolin in post ovariectomy rats. Providing *labisia pumila* can influence deoxypyridinolin expression approximately 53.46% and osteocalcin expression approximately 66.97% (Mariati, 2016).

3.2.3 The effect of *labisia pumila* among menopausal women (pre and post)

A 16-week study in 197 healthy pre and postmenopausal women aged 40-60 years who were given 400 mg of *L. pumila*: n = 102 and placebo: n = 95 shows the subject given *L. pumila* experienced an increase in memory / concentration. Improvements are also seen in cardiovascular parameters, and the safety profile is normal (Intan Idiana *et al.*, 2014).

Postmenopausal women equipped with *L. pumila* did not show changes in hormones relevant to gynecology, luteinizing hormone (LH), folliculating hormone (FSH), and 17b-Estradiol. *L. pumila* water extract proved to be safe and effective for increasing several quality of life parameters and cardiovascular risk factors (total cholesterol [TC], low density lipoprotein cholesterol [LDL-C]) (Intan Idiana *et al.*, 2014).

Phytoestrogenic effects: *L. pumila* is believed to have phytoestrogens which act as producers of the main female sex hormones, especially estrogen. Phytoestrogens can be coumestants, isoflavones, and / or flavonoids. An in vitro study conducted (Jamia *et al.*, 2003) showed that ethanol extract from the root of *L. pumila* var increased the secretion of alkaline phosphatase in human endometrial adenocarcinoma cells in estrogen-free basal media. The researchers also showed that *L. pumila* plant extract had estrogenic properties that act as estrogen receptors modulator.

On the other hand, this plant has the ability to extract in modulating post-menopausal adiposity. This finding is based on observations of (Al-Wahabi *et al.*, 2007) who conducted an in vivo study on ovariectomized rats treated with 17.5 mg / kg / day of *L. pumila* var water extract. orally and 120 mg / kg / day estrogen replacement therapy (ERT) as a positive control. Found that water extract from plants (10-50 mg / kg / day) can modulate post-menopausal adiposity similar to the results of ERT treatment by initiating lipolysis in adipose tissue, thereby reducing symptoms of obesity. Plasma leptin from *L. pumila* water extract is proportional to the frequency of ovaries receiving ERT treatment.

The promising effects of *L. pumila* have also been proven from body composition and Metabolic features of mice given dihydrotestosterone to induce polycystic ovaries syndrome (PCOS). It was found that 50 mg / kg / day of water extract increased uterine weight by

27% and increased insulin sensitivity by up to 36% and increased lipid profile in PCOS without affecting body composition (Mannerås *et al.*, 2010).

Al-Wahabi *et al.*, 2007 and Effendy *et al.*, 2017 also reported that given 17.5 mg / kg / day can prevent osteoporosis after menopause. In addition, menopause will always cause the aortic wall to stiffen. Aortic stiffness consequently leads to the risk of cardiovascular disease .

Dianita *et al.*, (2016) reported the phytoestrogenic property of *L. Pumila* can maintain architectural elasticity aorta in ovariectomized mice.

4. Discussion

In this review, it has been known that *Labisia Pumila* has many benefits for human health, some benefits even very potential for cancer therapy and ERT. Modern management and the correct dissemination of information about products and how to use extra labisia pumila is the basis of changes in behavior of Malay people who often use traditional *Labisia pumila* extract to deliver labor although scientific evidence applied to humans is not available yet.

However, all these biological activities only have has been studied in vitro using cell lines and in vivo use laboratory animals. These results require further study applies to humans. There are gaps in this study and need to be bridged so that the pharmacological potential of *Labisia pumila* can be fully utilized. . Even though, it is very clear that *Labisia Pumila* actually has a lot use and store extraordinary potential for that future need to be found.

5. Conclusion

Labisia Pumila has many phytochemical benefits that have been identified to date and most of them of them have been reported to show beneficial properties such as antioxidant, antimicrobial and anti-inflammatory compounds, to maintain the reproductive system and women's health. Therefore, *L. pumila* extract has high potential to be the main ingredient in pharmacology industry.

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