



## RESEARCH ARTICLE

### IDENTIFICATION AND ANALYSIS OF ESTRONE IN GEDILEAVES (*ABELMOSCHUS MANIHOT JATROPHA MULTIFIDA EUPHORBIACEAE*) OF MATURE PREGNANT

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#### ABSTRACT

Indonesia is famous as an area highly rich in natural resources, both in terms of quantity and diversity. The government is striving to improve and promote the use of Indonesia's indigenous sources of nutrients and the use of natural herbal medicines Indonesia. The use of herbal medicine is closely related to traditional medicine that is inherited across generations as well as the manufacture and sales made by shamans. Historically, the use of herbal medicine began in 5000 BC by the Sumerians who have been able to identify some of the plants. This study aims to identify estrone hormone in Gedi (*Abelmoschus manihot, Jatropa multifida, euphorbiaceae*) leaves, typical vegetable produces known to be useful to expedite the delivery process of pregnant women. Gedi leaves (*Abelmoschus manihot Jatropa multifida, Euphorbiaceae*) is a kind of leaves that become food such as vegetables by the people of Micronesia, including Indonesia, especially the eastern part of Indonesia such as Manado in North Sulawesi, Halmahera in North Maluku, and Papua. Papuans even make the leaves as the main vegetable to complement food. This research can make a valuable contribution to the development of the medical world associated with obstetrics and gynecology. The leaves contain *estra-1,3,5(10)-trien-17-one*, a compound that affects estrogen hormone in pregnant women, especially during the third trimester to expedite the delivery process, amounted to 3.48%. Empirically, people in eastern Indonesia have been using the leaves as a traditional medicine to expedite the delivery process for generations. The identification is done by a combination chromatography, i.e., Gas Chromatography Mass Spectrophotometry (GC-MS).

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## INTRODUCTION

In the past, most people used herbal medications because of tradition or economic reasons, for example, because they cannot afford to pay a doctor. Apparently, the reasons began to shift. Many people start using the herbal medicine as a treatment once they realized its efficacy and safety. Herbal medicine has fewer side effects than chemical drugs. Traditional Chinese society considers that the food is the cause of the disease.

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Therefore, it is not surprising that herbal medicine is becoming more popular, not only in Indonesia but also in other countries which study the efficacy of herbal medicine (Ghofar, 2012; Maharani, 2010). Gedi (*Abelmoschus manihot jatropa multifida euphorbiaceae*) leaves are consumed by the people, especially those living in Halmahera in North Maluku. Some people even use them as the main vegetable to complement food. Gedi leaves are easily gathered, especially in areas with tropical climates such as Halmahera. For hundreds of years, the leaves are believed to expedite labor, where shamans will give the leaves, in the form of juice, two drinks a day in the morning and evening to pregnant women who have entered the third trimester or felt that they are due to deliver. This intervention has been done until now, especially in the villages located in

Halmahera (Mapanawang, 2016). Besides given to pregnant women, Gedi leaves juice is also given to those who suffer from constipation. With that background, this study aims to identify the active substance content in Gedi leaves. Active substance that is found among others is estrone (estra-1,3,5 (10)-trien-17-one), which reached 3.48% by means of GCMS (4).

## MATERIALS AND METHODS

Gedi leaves dried with a heater

### Tools

Technologies 7890 Gas Chromatograph With Auto sampler and 5975 Mass selective detector and Chemstation data system ionization mode electron impact, energy electron 70 eV, Column : Hp ultra2. Capillary column, length (m) 30 x 0,25 (mm). ID x 0,25 (um) film thickness.

Oven temperature: initial temperature at 70 C hold for a minute, rising at 3 C/mm to 150 C held for one minute and finally rising 20 C/mm to 280 C hold for 26 minutes.

Injection port temperature : 250<sup>0</sup> C, ion source temperature<sup>o</sup>: 230<sup>0</sup>C, interface temperature : 280<sup>0</sup>C, Quadrupole temperature : 140<sup>0</sup>C : Carries gas : helium, column mode : Constant flow, Flow column : 0,9 u L/ menit, imjection volume : 5 ul, split : 8:1 and method file : Balitro.

### Procedures

Leaves samples are dried in the oven for approximately 3 days or until completely dry. Once dry, puree them in a blender until they are completely smooth and then macerate them with ethanol p.a for approximately five days. Then, with a 10 ml pipette, Gediextract is inserted into the tube and then dried at 60° C for one hour. Once dry, dissolve it again with the remaining extract of 200 ml, and then injected into the GC-MS by producing extracts such as RT 39.38. Quality 93, the compound estra-1,3,5 (10)-trien-17-one, 3,15 bis [(trimethylsilyl) oyy]-(15. alpha) or another estronename with a content of 3.48% (Marimbi, 2010).

## RESULTS AND DISCUSSION

Estrogen stimulates the uterus and breast enlargement and growth of the mammary gland. This hormone also causes enlargement of the external female genitalia and a variety of pelvic ligament relaxation so as to facilitate the fetus in the uterus (Prawirahardjo, 2009). Gedi (*Abelmoschus manihot* *Jatropha multifida* Euphorbiaceae) leaf identification results showed that the leaves contain estrone as much as 3.48%. Since long ago, Micronesia people have used the leaves not only to cure diseases such as diarrhea and dysentery, but also to facilitate and expedite giving birth. Gedi leaf contains ethanol extract that possesses anti-convulsive and anti-depressants properties. The leaf itself is a sedative agent to fight pain. Over generations, the estrone substance contained in the leaves has been known to stimulate the uterus and affect the pelvic

ligaments so as to facilitate delivery (Ghofar, 2012; Prawirahardjo, 2009).

### Contents

Alkaloids, Tannins, Saponins, Flavonoids, Serotonin, Vitamin A, Vitamin C

### Benefits

Strengthening body issues, preventing miscarriage, facilitating delivery, controlling fertility, increasing milk production, reducing oxidation in pregnant women, maintaining dental care of pregnant women, treating constipation in pregnant women, treating anemia in pregnant women, eliminating urinary disorders in pregnant women, helping improve mood of pregnant women, treating ulcers in pregnant women, causing hiperprigementasi, lowering blood pressure, preventing bone loss, healing wound, helping sleep in pregnant women, improving maternal care disorders, anti-inflammatory, preventing heart disease, and lowering cholesterol (3). Gedi (*Abelmoschus manihot* *Jatropha multifida* Euphorbiaceae) leaves have high antioxidant content that are useful as anti free-radicals and cure diseases, especially in eastern Indonesia. STIKES Halmahera is currently conducting research on Gedi leaves that are beneficial to health (Mapanawang, 2016; Prawirahardjo, 2009).

Estrone benefits to pregnant women need to be considered. Estrone role in improving uterus contraction and pelvic ligament relaxation, internal and external genital organs, thus simplifying the delivery process is a novelty in the field of obstetrics and gynecology especially estrone substance derived from Gedileaves. The results provide a great benefit especially in development by pharmaceutical herbal production and development of knowledge, especially in the field of obstetrics and gynecology and herbal medicines as well as the development of medicine and nursing (Prawirahardjo, 2009; <http://manfaat.co.id/26-manfaat-daun-gedi-bagi-kesehatan>).

Gedi (*Abelmoschus manihot* *jatropha multifida* *euphorbiaceae*) is a tropical plant. The results of the study, found flavonoid in Gedi leaves extracted with ethanol. Pine et al (2011) reported that 96% ethanol extract contained flavonoids as much as 41.56%. Taroreh found that the sequence of hexane – acetone – methanol resulted in the IC<sub>50</sub> value of 42.83 µg/ml, and research by Pine et al. (2011) on the Gedileaves of 0.575 to 1496 µg/ml (Hillisch, 2004; Taroreh, 2015). Empirical experience demonstrates that Gedi leaves can be used to treat diarrhea and appendicitis and to facilitate giving birth. Gedi leaves are used to treat diseases such as kidney, ulcers, and high cholesterol. In Papua, the leaves are often used as postpartum medication and are believed to increase the production of breast milk of nursing mothers (Prawirahardjo, 2009; Prawirahardjo, 2009; Assagaf, 2013)

Estrogen is a generic term for estrus-producing compounds; the female sex hormones, which include Estrone (E1), Estradiol (E2), and Estriol (E3). Estrogen is considered to be the "female" hormone, whereas testosterone is considered the "male" hormone. However, both hormones are present in both sexes. Estrogen hormones play an essential role in the growth and development of female secondary sexual characteristics

such as breasts, pubic and armpit hair, endometrium, regulation of the menstrual cycle and the reproductive system. During the menstrual cycle, estrogen acts to produce an environment suitable for fertilization, implantation, and nutrition of the early embryo (<http://manfaat.co.id/26-manfaat-daun-gedi-bagi-kesehatan>; <http://www.medicalnewstoday.com/articles/277177.php> 7,11). Uses for estrogen as a drug include birth control, hormone replacement therapy, advanced prostate or postmenopausal breast carcinoma treatment, and osteoporosis prophylaxis. Estrogen is required during pregnancy for stimulating the production of progesterone from the placenta, the growth of the egg follicle, the growth of the vagina to its adult size, the thickening of the vaginal wall, and the increase in vaginal acidity that reduces bacterial infections are also correlated to estrogen activities. Estrogen is responsible for developing a thick muscular wall in the fallopian tubes, and for the contractions that transport the egg and sperm cells. In uterus, estrogen enhances and maintains the endometrium, the mucous membrane that lines the uterus. The endometrium's size and weight are increased in addition to cell number, cell types, blood flow, protein content, and enzyme activity. Estrogen stimulates the muscles in the uterus to develop and contract. Contractions help during the delivery of a child and placenta, and help the uterine wall to cast off dead tissue during menstruation. Estrogen is also thought to regulate the flow and thickness of uterine mucous secretions to enhance sperm transport (Taroreh, 2015; Assagaf, 2013; <http://www.medicalnewstoday.com/articles/277177.php>)

### Conclusion

Gedi leaves containing *estra-1,3,5 (10)-trien-17-one* amounted to 3.48% stimulate the enlargement of the external female genitalia and uterine contractility and the pelvic ligaments relaxation so as to facilitate the delivery process. This hormone plays a role in the birth of the baby and placenta.

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### Conflict of Interest

No conflict of interest

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