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The Potential of Young Dates (Phoenix Dactylifera) as an Agent in Supporting the Oogenesis Process: A Systematic Analysis

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A B S T R A C T

This study examines the potential of young dates (Phoenix dactylifera) as a nutritional agent in supporting the oogenesis process, which is an important aspect of women's reproductive health. The introduction identifies that infertility is a global health problem affecting 10-15% of couples in Indonesia, and there is an urgent need for an alternative approach to infertility treatment. Young dates, which are known to be rich in bioactive compounds such as antioxidants and essential nutrients, have the potential to improve egg quality and support reproductive health. The method used in this study uses a systematic literature review approach by analyzing 557 articles from various databases. Selection was carried out based on strict inclusion and exclusion criteria, resulting in 9 relevant articles for further analysis. This process follows PRISMA and JBI guidelines to ensure the validity and reliability of the data. The results showed that young dates had a positive effect on hormonal balance, increased levels of FSH and LH hormones, and improved ovarian structure in animal models. Research has also found that young dates function as antioxidants that can protect reproductive cells from oxidative damage, as well as increase the number of ovarian follicles. The discussion in this study emphasizes the importance of young dates in improving the oogenesis process and overall female reproductive health. The study concluded that young dates may be a promising herbal therapy for improving female fertility, with recommendations for further research to understand the specific mechanisms underlying the effects. The results of this study are expected to contribute to the development of alternative treatment strategies for infertility problems in the future

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INTRODUCTION

Infertility is a significant health problem that affects many women around the world, including in Indonesia. According to data from the World Health Organization (WHO), about 15% of couples of reproductive age have difficulty conceiving, with the prevalence varying in different countries (Tumaji et al., 2020). In Indonesia, the infertility rate is estimated to reach 10-15% among couples who want to have children (Jamhariyah et al., 2022). These problems not only have an impact on physical health, but can also cause serious psychological impacts, such as stress, depression, and social stigma (Muntasya et al., 2022). Therefore, it is important to explore alternative approaches in the treatment of infertility, one of which is through herbal therapies that have been recognized in local medicine traditions.

One of the herbs that has attracted attention is the young date (Phoenix dactylifera), which has been used in various cultures as a nutritious food and traditional medicine. Research shows that young dates have the potential to support the oogenesis process, which is an important stage in female reproduction (C, 2022). The bioactive compounds found in young dates, such as antioxidants and essential nutrients, can contribute to improved reproductive health and egg quality (Sabariman et al., 2021). However, there is still a lack of understanding of the specific mechanisms underlying the positive effects of young dates on female fertility, so more research is needed to confirm these benefits.

Infertility in women of reproductive age can be caused by a variety of factors, including hormonal disorders, reproductive health problems, and an unhealthy lifestyle (Nurbaida, 2023). The negative impact of infertility is not only felt by the individual, but can also affect social and emotional relationships, as well as the mental health of women experiencing this condition (Nurhadhani & Suzanna, 2023). Therefore, it is important to look for solutions that are not only medically effective, but also consider the holistic aspects of women's health. Herbal therapies, such as the use of young dates, can be a promising approach to improving female fertility, but they still need to be explored further in the context of scientific research.

Although there are several studies that show the potential of herbal therapy in improving fertility, there are still significant research gaps. Many existing studies tend to focus on conventional medicine and lack systematic exploration of the effects of herbal therapy (Muntasya et al., 2022). Therefore, this study aims to fill this gap by conducting a systematic literature study on the potential of herbal therapy, especially young dates, as an alternative approach to improve fertility of women of reproductive age. The research question posed was: "How is the effectiveness of herbal therapy, especially young dates, in improving fertility of women of reproductive age?" The purpose of this study is to identify and analyze the existing evidence regarding the use of young dates in the context of fertility, as well as to provide recommendations for future research and clinical practice. The implications of this study are expected to provide new insights into the development of alternative treatment strategies for infertility problems, as well as increase

awareness of the importance of a holistic approach in women's reproductive health.

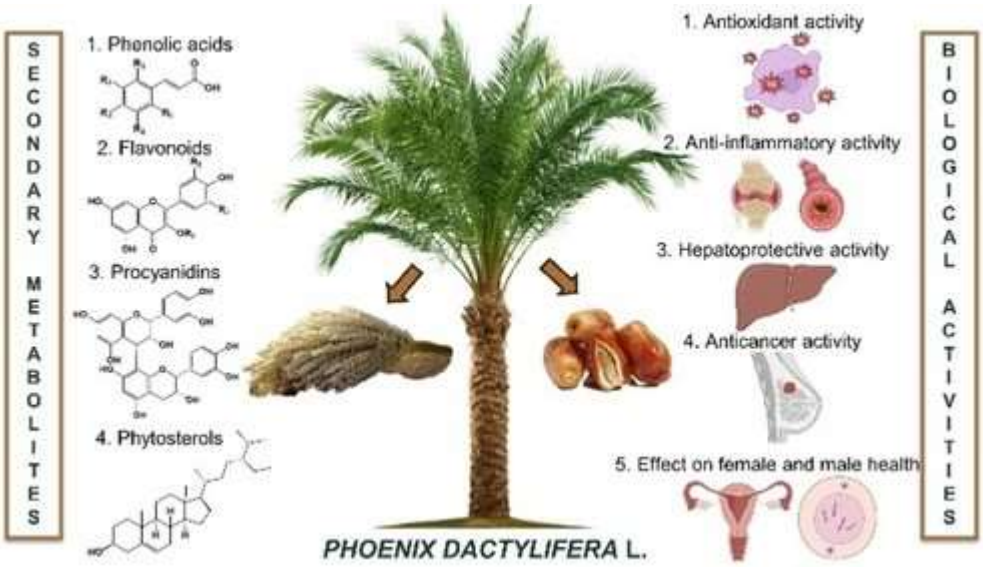

Figure 1. The Content and Benefits of Dates (AbouZeid et. al., 2024)

METHODS

Table 1. Methodology

Kriteria (PICOS)	Inclusion	Exclusion
Population	Women of reproductive age, test animals related to oogenesis	Male, non-reproductive disorders
Intervention	Consumption of young dates/dates or young dates/dates extract	In addition to dates
Comparators	Other supplements (folic acid, vitamin E)	No clear controls
Outcome	Improved quality of oocytes, reproductive hormones	Non-reproductive effects

RESULTS

A total of 557 articles have been found based on the search across four journals. Due to non-research publications, years not exceeding the last ten, and duplication, 277 have been eliminated as not meeting the inclusion criteria. The chosen articles will pass a feasibility evaluation conducted by the JBI scientific committee utilizing PRISMA, PICOS, and JBI. Nine of the 65 best dates from the data gathering procedure were chosen as a reference for the ability of youthful dates to enable oogenesis.

Based on the results of literature search through publications in four databases and using keywords that have been adjusted to Medical Subject Headings (MeSH), the researcher obtained 557 articles that matched these keywords. The search results that had been obtained were then checked for duplicates, found as many as the same article so that it was removed and 277 articles remained. The researcher then screened based on the title (n = 65), filtered and took the full copy (n = 33) and full text (n = 9) adjusted to the theme of the literature review. The assessment was carried out based on the feasibility of inclusion and exclusion criteria and obtained as many as 9 articles that can be used in literature review. The results of the selection of study articles can be illustrated in the Flow Diagram below:

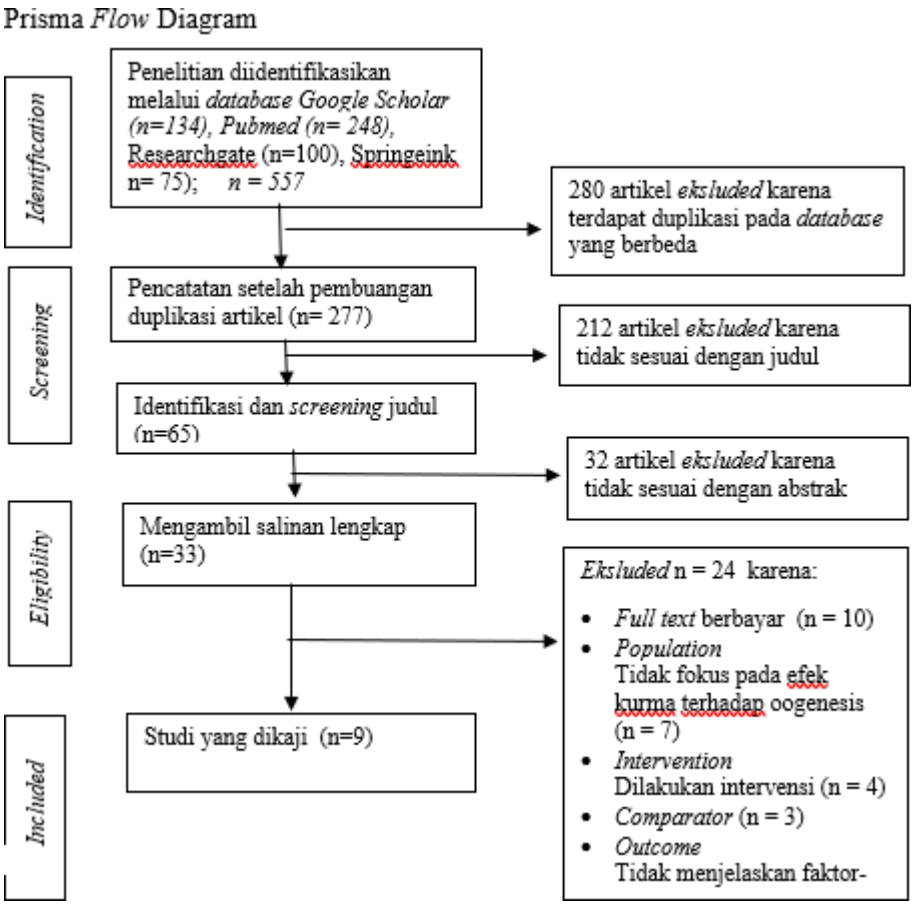

Figure 2. Prism Diagram

Most studies have used dates to aid the conception process and are closer to the hormones of young dates rich in phytochemicals, specifically containing flavonoids and phytosterols, and often acting as estrogen from outside the body. Some studies show that phytochemicals have estrogenic effects or stimulate the hormone estrogen in the body, which can support fertility and egg maturation.

In other studies, it also supports the function of young dates in female hormones. Young dates have produced an important role for health, but their direct role in regulating hormones such as FSH (Follicle-Stimulating Hormone) and LH (Luteinizing Hormone) in women is still not widely studied. There is

research in the article that supports that young dates as an antioxidant in the reproductive system of female rats exposed to arsenic, as evidenced by an increase in FSH levels, an increase in the number of follicles, and an increase in endometrial thickness. directly in scientific studies.

Table 2. Result

No.	Title, author, year, volume	Methods (design, samples, variables, instruments, analysis)	Research Results	Database
1.	Effects of Date Palm Pollen on Fertility and Development of Reproductive System in Female Balb/C Mice," Moshfegh F., Baharara J., Namvar F., Zafar-Balanezhad S., Amini E., Jafarzadeh L. (2016), *Journal of HerbMed Pharmacology*, 5(1): 23-28	Design: Experimental, Sample: 10 groups (8 experiments, 2 control) of rats Balb/C, Variable: DPP dosage (100 and 200 mg/kg), Hormone Measurement reproduction, histology ovarium, Instrument: microscope light Analysis: ANOVA and Tukey-Kramer test	Consumption of date pollen (DPP) increases the index Mass of ovary, diameter ovaries, number of follicles (primary, sekunder, graf), as much as serta Estrogen and Progesterone significantly, but not affect LH levels and FSH. DPP also Increase percentage mating success and System development reproduction in offspring female.	Google Scholar
2.	Effect of Date Palm Pollen Supplementation on the Egg Production, Ovarian Follicles Development,	**Design:** Experimental, Sample: 84 chickens Lohman LSL (divided by 4 group), Variable: DPP dosage (1.25, 2.5, and 5.0 g/kg),	Date pollen supplement increase egg weight, albumen quality, quantity follicel ovarium, up to hormone FSH and LH, as well as weight ovaries and ovaries significant compared to	Google Scholar

	Hematological Variables and Hormonal Profile of Laying Hens," Saleh M., Kokoszyński D., Mousa M.A., Abuoghaba A.A. (2021), *Animals*, 11:69	Measurement: weight body, egg production, egg quality, profile hormonal (FSH, LH), Instruments: ELISA, microscope Analysis: ANOVA, Duncan test	control group. Increased antioxidant capacity as well Observed.	
3.	Effect of feeding date palm fruit (Phoenix dactylifera L.) on menstrual health in a convenient sample of females. Hiba F. Al-Sayyed, Hamed R. Takruri, et al. (2018), Conference Paper	Design: Observational Sample: Female selected through metode convenience sampling Variable: Consumption young dates (Phoenix dactylifera L.) Measurement: Health parameters menstruation, such as menstrual cycle, pre-menstrual symptoms, and physical condition related Instrument: Questionnaire which is filled by participants, and Direct observation Analysis: Statistics descriptive for Evaluate	The study found that that consumption of young dates Related Health Improvement menstruation in women, including repairs Cycle regularity and Decrease in pre-menstruation. Nutritional content dates, such as iron, calcium, and vitamins, Potentially helpful Supports health reproduction with provides micronutrients essential that the body needs during the menstrual cycle. The impact of young dates in Improves Health menstruation gives indications about the potential of this fruit in supports oogenesis. Nutrients essential in young dates play a role in maintaining	Google Scholar

		Health changes Menstruation Related Consumption of dates young	hormonal balance and ovarian health, which important in the process formation and maturation of oocytes. With More cycle regularity good and declining menstrual discomfort, consumption of young dates can create a more optimal physiological environment to support the development of ovarian follicles and the overall oogenesis process.	
4.	Phoenix dactylifera L. date tree pollen fertility effects on female rats in relation to its UPLC-MS profile via a biochemometric approach. Asmaa M. Otify, Abdel-Mohsem M. Hammam, Mohamed Aly Farag (2021), *Steroids*, Volume 173,	**Design**: Experimental with pendekatan Biochemometer **Sample**: 42 mice albino females immature, divided in seven groups Variable: Treatment with ethanol extract pollen dates dan Its fraction (petroleum ether, methylene chloride, ethyl acetate, n-butanol) to the activity hormon FSH, LH,	Research shows that the n-butanol fraction and Petroleum ether from extract Pollen Dates Give highest effect on activity hormonal, with significant improvement in levels of FSH, estradiol, and Progesterone. This faction is also showing proliferation significant endometrium, increased genital weight, and the existence of corpora lutea active in the ovaries, which shows LH- high likes. Positive effects The pollen fraction of dates on	Google Scholar

	Article 108888	estradiol, and progesterone Measurements: Weight genital organs and ovary, level hormon FSH, LH, estradiol, and Progesterone in serum, and examination	parameter hormon reproduction such as FSH, LH, estradiol, and progesterone shows the potential that Strong in support oogenesis. Content flavonoids, fatty acids polysaturated, and saponins found in the n-butanol and petroleum	
		histological tissue ovaries and uterus Instrumen: Enzyme-linked immunosorbent assay (ELISA) for hormone measurement; UPLC-MS for profiles metabolit; examination histologis Using microscope after Coloring hematoxylin-eosin Analysis: Analysis ANOVA one way followed by a post hoc test Tukey for Differences between treatment, and Multivariate Analysis OPLS for join	Estimated ether plays a key role in repairing Hormonal environment and Supports growth and follicle maturation ovary.	

		Metabolites with Biological activity		
5.	The Effect of Ajwa Dates Fruit Extract on Follicle Stimulating Hormone (FSH), Graafian Follicle and Endometrial Thickness in Female Rats Exposed to Arsenic Kusumasari, H. A. R., Desyanti, H. H., & Mahanutabah, H. (2020). *Journal of Global Pharma Technology*, *12*(08), 122-130.	**Design:** *Experimental with Posttest only control group design* **Sample:** There are 5 mice that were given treatment. Variable: **Independent:** Arsenic Trioxide (As2O3) at a dose of 3 mg/kg of body weight per day. **Dependent:** doses of Ajwa date extract (2 ml/kg, 4 ml/kg, and 8 ml/kg body weight per day) concurrently with arsenic exposure. **Instruments:** In measuring FSH levels, this study uses ELISA Kit **Analysis:** The analysis was carried out using the SPSS (Statistical Package for the Social Sciences) version of the 25. With ANOVA for testing 5 groups	Overall The study concluded that Ajwa date extract Provides protection antioxidants in the system reproduction of female rats exposure to arsenic, as proven with **increased** rates FSH, **an increase** in the number of follicles, and **an increase in** endometrial thickness. These results highlight the potential of Ajwa date extract as a protective agent against the harmful effects of arsenic on women's reproductive health.	PubMed
6.	Anti-infertility Effect Test of Date Palm Fruit Extract (Phoenix Dactylifera L.) in Female Mice (Mus Musculus) Compared with Propolis Dillasamola D,	**Design** : Experimental **Sample** : The animals were divided into 5 groups, each consisting of 5 heads (4 groups experiment and 1 control group) **Variable** : Influence of extract	The study's findings on the impact of ethanol extract administration's dosage and duration on rats' ovarian and uterine histology revealed that while atresia follicles and myometrial thickness were unaffected, the number of primary, secondary, tertiary, de Graaf, and corpus luteum	Google Scholar

			follicles increased.	
	A. Almahdy, Anggraini R, Dilliarosta S, P. Oktomalio B, Noverial (2018) Asian Journal of Pharmaceutical and Clinical Research Vol 11, Issue 11, 2018	dates (Phoenix Dactylifera L) in female mice (Mus Musculus) compared to the administration of propilis **Instruments:** divided into 2 treatment groups, namely the control group and the experiment, then anesthetized and dissected **Analysis** : Descriptive analysis was used to examine qualitative data on alterations in uterine and ovarian histological features. Variance analysis (ANOVA) was used to examine quantitative data on ovarian histology preparations, such as the number of ovarian follicles and corpus luteum, and uterine histology preparations, such as uterine diameter, endometrial thickness, and myometrium. Treatment differences were significant. continued with the Duncan test with a confidence interval of 95% (ÿ=0.05). Using a two-way ANOVA and Duncan test.	At a dose of propolis of 100 mg/kgBB, the increase only occurs in the primary, secondary, and corpus luteum follicles.	

7.	The Effect of Unripe Dates (Phoenix dactylifera) on Rat Ovarian Follicle Maturation and Ovulation Herlambang, Ave Olivia Rahman, Erny Kusdiyah Brawijaya Medical Journal, Vol. 31, No. 2, August 2020, Pp. 77-80	**Design** : Experimental **Sample** : 18 female rats of the Sprague Dawley strain who were 3 months old and had given birth once) which were divided into 3 **independent groups:** young date fruit (Phoenix dactylifera) **Dependent:** maturation of ovarian follicles and ovulation in mice **Instrument:** Treatment is administered via sonde for 28 days, starting when the mice are in the estrus phase. After the treatment period, the ovaries of the mice are taken and examined histopathologically using Hematoxylin-Eosin staining to observe the number of ovarian follicles according to their maturation stage **Analysis** : The Kruskal-Wallis test was followed by the Mann-Whitney test, with a p value of 0.05 < considered significant.	The results showed that the administration of a dose of 320 mg/kgBB significantly increased the number of corpus luteum compared to the control group, which was 21.50±4.72 compared to with 15.16±3.71 in the control group. This increase indicates that date powder young 320 mg/kgBB, although it is statistically insignificant.	Researchg ate
8.	Effect of Phoenix dactylifera pollen grain on maturation of preantral follicles in NMRI mice Farzaneh Salek Abdollahi, Jawad Bahrara, Khadijeh Nezadshahrokha Badi, Farideh Namvar, Elaheh Amini Jurnal *Journal of HerbMed Pharmacology*, Volume 4,	**Design** : Experimental In Vitro **Sample** : The sample in this study was a preantral follicle isolated from the ovaries of female NMRI rats aged 2-3 weeks. These follicles have a diameter of 120-150 µm and were selected because they are in the early stages of development before maturation, making them suitable for in vitro maturation testing. **Independent:** Date pollen (Phoenix dactylifera)	Follicle diameter increased significantly in all treatment groups when compared to the control group, according to the results; however, the ripening rate was much faster when 20 µg/ml of date pollen granules were present (P<0.01). In comparison to the control group, the follicle survival rate on day 12 of culture was considerably	Researchg ate

	Number 3, July 2015, pages 93-97(JHP-4-93).	**Dependent: Pre-antral follicle maturation** **Instrument:** **The diioled follicle, a preantral follicle with a diameter of 120–150 µm, was chosen and cultivated in MEM-α culture media with varying concentrations of DPP (0, 10, 20, 30, 40 µg/ml) after DPPH was used to measure the antioxidant content in date pollen. extract) for twelve days. Throughout the culture phase, follicular diameter measurements were taken every 48 hours using an ocular micrometer with a 100X magnification and Image J imaging system software version 1.43 (National Institutes of Health, Bethesda, MD).** **Analysis :** **One Way ANOVA, with a P value of < 0.05 is considered significant**	greater when 20 µg/ml of date pollen granules were present (P<0.05). Oocyte maturation is accelerated when DPP is added to maturation media. Rates of survival, maturity, and rate of Formation Antrum increases significantly in group. This is compared with the control group (P<0.05).	

9.	Effects of Date Palm Pollen on Women with the Polycystic Ovarian Syndrome Rania Mahfouz Abd El-Wahed dan Alshaymaa Abdelbadie Abdelalim Nasr The Egyptian Journal of Hospital Medicine (October 2022) Vol. 89, Page 4622- 4625	**Design :** **One-arm clinical trial** **Sample :** **50 women who meet Rotterdam's criteria for PCOS** **Independent: Dependent date pollen:** **women with PCOS** **Instruments:** **1. Biochemical tests include:** **FSH, LH, and estrogen levels at the initial follicular phase (day 2 or, also measure mid-luteal progesterone.** **2. Transvaginal AS: for the diagnosis of PCOS (presence of 12 or more follicles measuring 2-9 mm in diameter in one of the ovaries or increased ovarian volume >10 cm^3).** **Analysis :** **Data tested normal distribution using the Shapiro Wilk test. The chi-square test ($\chi 2$) to calculate the difference between two or more groups of qualitative variables with a P- value of <0.05 is considered significant.**	The study's findings demonstrated a significant increase in progesterone and FSH levels with a p-value of 0.001, a significant decrease in estrogen and LH levels with a p-value of 0.001, and a gradual improvement in Graaf follicle size with a p-value of 0.001 after three months of daily administration of 3 grams of date pollen. If there is success, the results are displayed.Three of the patients in the study group became pregnant after receiving date pollen, while the remaining patients showed improvements in follicle growth. Thus, it can be said that date pollen can be utilized to treat PCOS-related infertility in women.	Researchg ate

Benefits of Young Date Dates

Male reproductive cells called date palm pollens (DPPs) are found in the blooms of date palms (Phoenix dactylifera L., a member of the Palmae family). Millions of palm trees in the Arab world produce about 1000 tons of DPP a year. Ancient Chinese and Egyptians also utilized DPP as a restorative remedy. Additionally, DPP is utilized as a nutritional supplement all over the world. It has long been believed that DPP and male palm blossoms increase fertility and act as aphrodisiacs. In the Middle East, DPP has been used as an alami cure to increase female fertility and treat male infertility.

The primary constituents of this plant are amino acids. The Egyptian DPP was found to have the following amino acids: aspartate, threonine, glutamine, proline, glycine, alanine, valine, methionine, isoleucine, leucine, tyrosine, phenylalanine, histidine, lysine, arginine, and serine. Furthermore, four different types of Egyptian DPPs have been found to include vitamins and essential elements such B1, B2, and B12, with the levels changing according to

the type. Significant levels of vitamins A, E, and C, minerals like zinc, selenium, iron, molybdenum, copper, manganese, cobalt, and nickel, amino acids like leucine and lysine, and fatty acids like palmitic acid, linoleic, and myristat have all been found in palm pollen. About 1.47% of the oil in dates is made up primarily of folic acid (68.04%).

Non- crystalline estrogenic substances are also detected in DPP extracts. Estrone and cholesterol are isolated from date seeds and pollen. High-performance liquid chromatographic analysis of hexane fractions from the Egyptian DPP revealed the presence of estron, estradiol, and estriol. The DPP examination revealed the presence of B- amyrin and B- sitosterol. In addition, the glycoside of steroid saponins that have glucose and rhamnosa as part sugars and 2 glycoproteins with unknown structures are isolated from DPP. El-Ridi showed that DPP has hormones gonadotropins include follicle- stimulating hormones and luteinizing hormones. DPP shows gonadotropin activity and causes an increase in the weight of the female sex organs. DPP water suspension can compensate for the decrease in luteinizing hormone and follicle-stimulating hormone in adult female rats exposed to lead acetate. Water extract increased the amount of testosterone, estrogen and progesterone as well as the number of secondary and antral follicles in adult female rats (Tahvilzadeh, et al, 2015)

DPP extracts also contain non-crystalline estrogenic compounds. Date seeds and pollen are used to separate cholesterol and estrone. Estron, estradiol, and estriol were detected in the hexane fractions from the Egyptian DPP by high-performance liquid chromatographic analysis. B-sitosterol and B-amyrin were detected by the DPP analysis. Furthermore, two glycoproteins with unidentified structures and the glycoside of steroid saponins with glucose and rhamnosa as component sugars are separated from DPP. El-Ridi demonstrated that DPP contains gonadotropins, which include luteinizing and follicle-stimulating hormones. DPP increases the weight of the female sex organs to rise and exhibits gonadotropin activity. Adults' declining levels of follicle-stimulating hormone and luteinizing hormone can be made up for using DPP water suspension.

When young date powder was given to female rats, the number of corpus luteum increased, indicating an increase in ovulation, according to Herlambang et al. (2020). Furthermore, female rats' primary, secondary, tertiary, de Graaf, and corpus luteum follicle counts can be increased by ethanol extract from immature dates (khalal) (Noverial, 2018). In the meantime, laying hens' ovarian follicle development and FSH and LH hormone concentrations were shown to increase when date pollen supplements were added to their diet (Saleh et al., 2021).

The antioxidant and nutrient effects on young dates were also described in the Shaikh study, et. al. (2023) and Shehzad et al. (2021) obtained the result that dates contain powerful antioxidants, which can reduce the risk of infertility by protecting reproductive cells from oxidative damage. Dates are also rich in nutrients such as protein, fat, and carbohydrates that are important for reproductive health. Date supplementation in the diet of rats fed a high-

cholesterol diet improved ovarian structure and function, as well as restoring reproductive hormone levels to normal levels (El-Sayyad et al, 2019).

Dates are known to contain powerful antioxidants such as polyphenols and sterols, as well as large amounts of carbohydrates, B vitamins, magnesium, and potassium all of which play an important role in maintaining reproductive health. The antioxidants in dates can help reduce oxidative stress on the ovaries, thus supporting hormonal balance. Other nutrients, such as magnesium, play a role in regulating hormone levels, while potassium supports electrolyte balance, which is essential in endocrine and reproductive function. Although this journal focuses on pregnancy, the nutritional content in dates is also beneficial for women who are preparing for pregnancy because it can help prepare the body for optimal ovum maturation (Nasiri et al. 2019)

In a study conducted by Abd El Wahed et al., in 2022. Assess the effects of DPP on women suffering from polycystic ovary syndrome (PCOS), a condition that often causes ovulation disorders and infertility due to hormonal imbalances. In this clinical study, 50 women with PCOS were given 3 grams of date pollen per day for three month, and changes in hormone levels and follicle size are measured each month. The results showed an increase in FSH and progesterone levels, as well as a decrease in LH and estrogen levels after treatment. This condition creates a better hormonal balance for the ovulation process, with FSH playing an important role in stimulating healthy follicle development. In addition, DPP also significantly increases the size of the Graafian follicle, indicating optimal maturation of the ovum. This change is important because one of the main problems in PCOS is the dominance of LH and hormonal imbalances that interfere with ovulation. DPP also contains phytoestrogens, which in small doses can function as estrogen agonists, correcting hormone levels in women with low estrogen, as is the case with PCOS. The antioxidants in DPP also reduce oxidative stress, which is another risk factor for hormonal imbalances and infertility.

DISCUSSION

Young dates are one type of fruit that is rich in nutrients. Young dates contribute to reproductive health, one of which plays a role in the oogenesis process. Oogenesis is the process of egg formation which is important for a woman's fertility. About 70% of the content of young dates is carbohydrates. Young dates are rich in fiber, so they play a role in maintaining digestive health and can help regulate blood sugar levels. Young dates contain vitamins and minerals, which contribute to the hormonal balance necessary for oogenesis. Dates have a high iron content, which is important for preventing anemia. Anemia can affect fertility by reducing the body's ability to produce healthy red blood cells.

In rats' ovarian and uterine histology, the study's findings on the effects of dose and duration of administration of ethanol extract of young dates revealed an increase in primary, secondary, tertiary, de Graaf, and corpus luteum follicles, but no effect on atresia follicles or the thickness of the myometrium and endometrium (Dilasamola, 2018). Steroids, anthocyanins,

procyanidins, carotenoids, flavonoids, phytoestrogens, and other significant substances are all present in young dates. In this study, phytoestrogens are the substances that are primarily responsible for the increase in ovarian follicles. One class of active substances found in plants that shares a chemical structure with estradiol is flavonoids, often known as phytoestrogens. In addition to having estrogenic and antiestrogenic actions, the chemical can bind to estrogen receptors. Previous studies have demonstrated that dates can raise levels of both progesterone and estrogen, indicating that phytoestrogens can raise estrogen levels.

Pregnant women who consume dates can drastically shorten the time of gestation and the duration of one birth, according to studies (Nasiria et al., 2019). Additionally, because dates contain a high percentage of carbs, mostly fructose and glucose, it is thought that eating them will help pregnant women save and provide energy. Three dates (equal to 15 grams of carbs with 60 calories) and 110 milliliters of water consumed during childbirth have been shown in studies to have antinociceptive and anti-inflammatory qualities and to greatly shorten the duration of the second stage of labor. By inhibiting inflammatory processes, date extract has an antinociceptive impact through a peripheral mechanism. Date extract has an antinociceptive effect through a peripheral mechanism of pain inhibition (i.e., blocking inflammatory pathways of pain sensation through inhibition of prostaglandin **synthesis)**

CONCLUSIONS AND RECOMMENDATIONS

Young dates or phoenyx dactylifera have great potential in the world of health that is carried out herbally. The analysis that has been carried out through a systematic literature review shows that young dates are able to help increase FSH levels, increase the number of follicles, and increase endometrial thickness, to help follicle maturation because dates contain flavonoids. The nutritional content of dates, such as iron, calcium, and vitamins, has the potential to support reproductive health by providing essential micronutrients that the body needs during the menstrual cycle. The impact of young dates in improving menstrual health gives an indication of the potential of this fruit in supporting oogenesis.

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