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A NARRATIVE REVIEW ON THE EFFECTS OF DATE FRUIT (PHOENIX DACTYLIFERA) CONSUMPTION DURING LATE PREGNANCY ON CERVICAL RIPENING, LABOUR INDUCTION AND LABOUR DURATION

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ABSTRACT

Introduction: Promoting natural labour with less medical interventions is one of main goals in modern obstetrics. Natural methods have gained more attention in recent years due to their potential to enhance cervical readiness, decrease the need for labour augmentation and shorten labour duration.
Objective: This review aims to investigate the current clinical evidence on the effects of date fruits consumption during late pregnancy on childbirth stages and postpartum complications, particularly concentrating on cervical dilation upon hospital admission, frequency of spontaneous labour onset, and duration of different labour phases.
Material and methods: A narrative review of 6 different randomized controlled trials and cohort studies investigating the impact of daily date intake in late-stage pregnancy on labour-related outcomes was conducted. Data that were extracted included cervical dilatation at hospital admission, frequency of spontaneous labour, need for oxytocin augmentation, and duration of all labour's phases.
Results: It was found that consumption of around 6–7 dates per day for 2-4 weeks before the estimated delivery date leads to increased cervical dilatation upon hospital admission, higher rates of spontaneous labour onset, shorter duration of all stages of labour (especially the latent and active phases of the first stage of delivery), and reduced need for oxytocin augmentation.
Conclusions: Date fruit consumption appears to be a safe, easily accessible and natural intervention that may positively influence the initiation and progression of labour. However, large, well-designed trials in more diverse populations need to be conducted to further confirm these findings and to establish evidence-based guidelines.

KEYWORDS

Pregnancy, Labour Induction, Cervix Dilation, Labour Duration, Date Fruit

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1. Introduction

The main clinical objective of contemporary obstetrics is to maximise the efficiency of labour by shortening its duration and minimising the need for medical intervention [1]. Interest in natural methods to facilitate labour and prevent postpartum complications has increased in recent years [2]. Several studies, including systematic reviews and meta-analyses, have explored the effects of different foods and herbs such as date fruits [3-8], raspberry leaf [9], chamomile [10], and evening primrose oil [11] on the initiation, progression, and outcome of labour. The World Health Organization recognises that evidence-based traditional practices might be beneficial for mothers and that research into their safety and efficacy is to be encouraged [12].

Prolonged labour is a significant problem, especially in developing countries, as it contributes to high maternal and perinatal morbidity and mortality [13]. As an extended duration of labour is a risk factor for adverse events, anything that delays the onset of the active phase of labour, including an unripe cervix, may also have negative effects by prolonging labour duration [14]. This is a relevant problem, since there are some studies that indicate a strong association between longer durations of all phases of labour and a negative childbirth experience [15]. The use of oxytocin induction without adequate cervical ripening may be associated with increased duration of labour, higher pain sensation and increased intervention rates [16]. Accordingly, it is necessary to investigate and study additional options that have the potential for optimising cervical readiness and decreasing the length of labour to prevent the risk of an unfavourable course and outcomes of labour. Date fruit intake at term has shown to positively modify cervical ripening leading to more advanced cervix dilation upon hospital admission and leading to a decreased need for labour augmentation [3-7].

Dates (Phoenix dactylifera) are a fruit that is commonly eaten especially in the Middle East with a growing popularity among other parts of the world. It has high nutritional value, it is rich in natural sugars

such as glucose and fructose, dietary fibre, potassium, magnesium, saturated and unsaturated fatty acids, and bioactive compounds like tannins and flavonoids [17, 18]. Certain reports indicate that these agents could affect labour physiology by various pathways. The high content of natural sugar in dates can potentially provide a fuel energy source during labour [19], which is required by the energy-consuming uterine smooth muscles. Smooth muscle excitability and uterine contractility are further promoted during labour by their high potassium and magnesium content [19, 20]. Tannins are potentially "uterotonic", which mean they can induce contractions of the myometrium [3]. Moreover, several reports have demonstrated that ingredients present in dates could modulate the expression or sensitivity of oxytocin receptors in the myometrium, resulting in the improvement of endogenous uterotonic activity, because oxytocin is the major stimulant hormone for the initiation and progression of labour [3]. Although the precise mechanisms are not known, these elements in combination may contribute to more coordinated and efficient uterine contractions during labour active phase.

Notwithstanding these promising findings, there are currently no formal clinical guidelines or recommendations for consuming date fruits to support labour.

The aim of this review is to analyse the current scientific evidence on the effect of *Phoenix dactylifera* intake during late pregnancy on cervical ripening, labour duration and labour induction.

2. Methodology

Several randomised controlled trials and prospective cohort studies were conducted to assess the impact of date fruit consumption on labour. In general, these studies indicate that intake of dates in the last 4 weeks before estimated delivery may significantly influence the initiation, progression, and outcome of labour.

A summary of the methodology and results from the included studies is presented in Table 1.

3. Results

Table 1. Details of studies included in this review [3-8].

Author	Year	Country	Sample size	Intervention	Comparison	Outcome
Al-Kuran et al. [3]	2011	Jordan	114	N=69 6 dates per day from 36th week of pregnancy	N=45 without intervention	increase in cervical dilatation increase in spontaneous onset of labour decrease in the need for induction decrease in the duration of the first stage of labour
Kordi et al. [4]	2013	Iran	210	N = 105 70–75 g dates per day from 37th week of pregnancy	N = 105 without intervention	increase in cervical dilatation increase in spontaneous onset of labour decrease in the need for induction
Jadidi et al. [5]	2015	Iran	110	N=55 7 dates per day from 38th week of pregnancy	N=55 without intervention	increase in cervical dilatation increase in spontaneous onset of labour
Kariman et al. [6]	2015	Iran	110	N=55 7 dates per day from 38th week of pregnancy	N=55 without intervention	increase in Bishop score decrease in the duration of the first phase of labour
Razali et al. [7]	2017	Malaysia	154	N = 77 7 dates per day from 36th week of pregnancy	N = 77 without intervention	decrease in the need for induction decrease in the duration of the first stage of labour
Kordi et al. [8]	2017	Iran	182	N=91 70–76 g dates per day from 37th week of pregnancy	N=91 without intervention	increase in spontaneous onset of labour decrease in the need for induction decrease in the duration of all phases of labour

3.1. Cervical Ripening and Dilatation at time of hospital admission

There have been several studies that demonstrated a positive association between date fruit consumption in late-stage pregnancy and cervical ripening at hospital admission [3-6].

According to Al-Kuran et al. (2011), average cervical dilatation upon admission to hospital was significantly greater in the date-consuming group compared to the control group and was equal to 3.52 cm versus 2.02 cm [3]. Similarly, Kordi et al. (2013) reported a significantly higher cervical dilatation in the intervention group (4.05 cm) compared to the participants in the control group (2.97 cm) [4]. Jadidi et al. (2015) also observed a considerable increase in cervical dilatation at admission in the intervention group with a mean dilatation of 4.62 cm [5]. Furthermore, Karmian et al. (2015) found a significantly higher Bishop score in women who ate dates in late period of pregnancy, with an average score of 7.3 [6].

Collectively, these findings suggest that regular date consumption in the final weeks of pregnancy has a positive influence on cervical ripening and dilation, potentially facilitating the onset and further progression of labour.

3.2. Labour induction

Reviewed studies have showed a positive association between date fruit consumption in the last weeks of pregnancy and the frequency of spontaneous labour as well as a reduced need of using external oxytocin IV infusion for labour augmentation [3, 4, 5, 7, 8].

In the study by Al-Kuran et al. (2011) spontaneous onset of labour was more common among the women who ate dates (96%) compared to those who did not (79%) [3]. The need for labour augmentation with oxytocin was also considerably reduced in the intervention group comparatively to the control one (28% versus 47%) [3]. Similarly, Kordi et al. (2013) observed a significant decrease in the need for induction as the spontaneous start of labour was noted in 80% of patients from the intervention group in comparison to 55.2% of women from the control group [4]. Jadidi et al. (2015) demonstrated that there was a significant increase in spontaneous onset of labour that stood at 63.5% in the intervention group [5]. Correspondingly, a similar effect was noted in the study by Razali et al. (2017) in which the group of pregnant women consuming dates in late third trimester had less need for augmentation of labour [7]. In another study by Kordi et al. (2017) the reduced need for external oxytocin use to accelerate delivery was also observed in the intervention group and was equal to only 5.50% of patients [8].

These findings consistently support the hypothesis that date fruit consumption in late-stage pregnancy is associated with a higher rate of spontaneous labour onset and a reduced need for labour augmentation, particularly with oxytocin.

3.3. Labour duration

Reviewed studies have showed a statistically significant decrease in the duration of labour [3, 6, 7, 8]. The research concentrated on the duration of the latent and active stage of the first phase of labour [3, 7] as well as the second and third phase of the delivery [6, 8].

Kordi et al. (2013) observed that the latent phase of the first stage of labour was much shorter in women consuming dates at the end of gestation, lasting approximately 510 minutes compared to 906 minutes in the non-consuming group [3]. Furthermore, Karmian et al. (2015) found a significant decrease in duration of the active phase of labour that was equal to 216.02 min in the intervention group [6]. In the study by Razali et al. (2017) latent phase of the first stage of labour was significantly shorter in the intervention group than in the control one and was equal to 364 min [7]. Another study by Kordi et al. (2017) reported a statistically significant difference between the average length of active phase of labour (329 min vs. 249 min), second (33.6 min vs. 13.7 min) and third phase of labour (5.1 min vs. 2.5 min) in case of spontaneous start of delivery in women that have never given birth before while consuming dates from 37th week of pregnancy onwards in comparison to women who did not eat any dates [8].

Collectively, the findings support the conclusion that date fruit intake from the late weeks of pregnancy may shorten various stages of labour, particularly in both the latent and active phase.

4. Discussion

The results of this narrative review suggest that regular consumption of date fruit during the final weeks of pregnancy has positive affect on several important aspects of labour. In the analysed studies, pregnant women who consumed 6-7 dates daily presented with more advanced cervical dilatation upon hospital admission, a higher percentage of spontaneous labour onset; lower need of exogenous oxytocin use for labour augmentation and a shorter duration of all stages of labour (mostly latent and active part of the first stage), compared with pregnant participants who did not consume dates in the control groups [3-8].

Higher cervical dilatation upon hospital admission has been associated with improved birth outcomes and reduced rates of postpartum interventions [21]. For instance, women admitted in active labour with the cervical dilation equal or higher than 4 cm are less likely to undergo caesarean section or require pharmacological augmentation and are more likely to have a spontaneous vaginal delivery [21].

Spontaneous onset of labour is another favourable factor, associated with better maternal satisfaction [22, 23], shorter hospital stays, lower incidence of uterine hyperstimulation, episiotomy, epidural anaesthesia, postpartum haemorrhage and reduced risk of instrumental or operative delivery compared to labour induced with oxytocin [24, 25].

There are many maternal and neonatal benefits of a shorter labour. As for the mothers, short delivery reduces physical fatigue, uterine atony, and the risk of infection, especially when the rupture of membranes is prolonged or vaginal examinations are frequent [26, 27]. Long labour is also associated with increased rates of postpartum haemorrhage, operative delivery, and maternal distress [28]. At the neonatal level, a shorter duration of labour correlates with higher Apgar scores, lower frequency of foetal distress, and decreased number of admissions to neonatal intensive care units, which most likely is related to decreased exposure to intrapartum hypoxia or birth trauma [29].

Significant negative effects of date consumption during pregnancy were not reported in any of the reviewed studies, which indicate that this is a safe intervention that could be recommended, especially in situations where women prefer natural birth support techniques or where access to professional medical interventions or labour induction is limited [3-8].

However, the reviewed studies have some limitations. Most of the interpreted trails have been conducted on Middle Eastern and Asian populations. Extension of future studies on European and other Western populations would help to confirm the positive effects of date consumption across more diverse groups. Sample sizes in the reviewed research were relatively small with the biggest one counting only 210 pregnant women [4]. Further research with much bigger intervention and control groups would give more specific results. Additionally, in almost all the reviewed studies the methodology design was similar - the quantity of the dates ranging from 6 to 7 dates per day [3-8] and timing of the initiation of dates intake varying between 36th and 38th week of gestation [3-8]. It remains to be investigated whether earlier initiation (for example starting from the second or early third trimester) could enhance the observed effects.

In addition, while most of the reviewed research focused on fresh date fruits consumption, it is worth noticing that different cultivars of *Phoenix dactylifera* vary in size and biochemical composition which may influence their impact on studies. There are over 400 known types of dates [30]. For example, Mazafati dates, most common in Iran, are soft, sweet, and fleshy [30] with high level of phenolic content [31]. In contrast, Medjool dates, popular in Western countries mostly Morocco, are larger, drier, and contain a higher concentration of sugars such as glucose and fructose [32]. Such differences in compound content may affect the bioavailability and efficacy of dates in supporting cervical ripening, uterine contractility, and labour progression. Therefore, future research should not only standardise the dosage and timing of date fruit intake initiation but also specify the cultivar used, which will improve the understanding of different physiological effects.

Other forms of dates such as syrup have also been explored in smaller studies suggesting potential benefits in labour [33, 34]. For instance, study by Kordi et al. (2010) where pregnant women were given 132 g date honey syrup from the 4 cm dilation of the cervix to the time of the delivery showed significant increase in spontaneous progression of labour (96.7%) and significant decrease in labour duration (351 min) compared to control group that were given placebo [35]. In another research by Fathi et al. (2018) women in labour were consuming 6 pieces of date fruits blended in 150 ml water every 30 to 60 minutes and showed significant decrease in average length of active phase of labour compared to the control group with no intervention [36].

Moreover, the impact of post-harvest processing, storage and international transportation on the properties of dates should also be taken under consideration. Imported date fruits spend a long time in inadequate temperature, humidity and light-access conditions, which may influence their nutritional content and lead to the degradation of bioactive compounds such as phenolics and flavonoids. For example, studies

have shown that prolonged storage at wrong temperatures can lead to a reduction in total phenolic content in various date cultivars [36]. Similarly, changes in texture and sugar content due to inadequate storage conditions may influence bioavailability of beneficial compounds found in dates. Therefore, not only the cultivar but also the freshness and post-harvest treatment of dates are important factors that influence the effectiveness of this natural intervention both in pregnancy and labour.

Despite these limitations, the consistency of the results across multiple trials is noteworthy. Further trails are necessary to establish standardised obstetric recommendations.

5. Conclusions

Date fruits (*Phoenix dactylifera*) can be used in late-stage pregnancy to promote better cervical ripening and dilation, enhance spontaneous labour onset, reduce the need for labour augmentation particularly with the use of exogenous oxytocin and shorten delivery duration. Despite promising results, there are some limitations related to small sample sizes, similar methodologies, geographic homogeneity of studies and unknown variability of used date cultivars that force the need for further research. Future larger trials in more diverse populations are necessary to validate the clinical usefulness of this natural intervention.

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REFERENCES

1. Grobman WA. The role of labor induction in modern obstetrics. American Journal of Obstetrics and Gynecology. 2024;230(3):662-8. https://doi.org/10.1016/j.ajog.2022.03.019
2. Hall HG, Griffiths DL, McKenna LG. The use of complementary and alternative medicine by pregnant women: A literature review. Midwifery. 2011;27(6):817–24. https://doi.org/10.1016/j.midw.2010.08.007
3. Al-Kuran O, Al-Mehaisen L, Bawadi H, Beitawi S, Amarin Z. The effect of late pregnancy consumption of date fruit on labour and delivery. Journal of Obstetrics Gynaecology. 2011;31(1):29-31. https://doi.org/10.3109/01443615.2010.522267
4. Kordi M, Aghaei Meybodi F, Tara F, Nematy M, Shakeri MT. The effect of date consumption in late pregnancy on the onset of labor in nulliparous women. Iranian Journal of Obstetrics, Gynecology and Infertility. 2013;16(77):9-15. https://doi.org/10.22038/ijogi.2013.2101
5. Jadidi MY, Sang SJB, Lari H. The effect of date fruit consumption on spontaneous labor. Journal of Pizhūhish dar dīn va salāmat. 2015;1(3):4-10. https://journals.sbmu.ac.ir/en-jrrh/article/view/12008
6. Kariman N, Yousefy Jadidi M, Jam Bar Sang S, Rahbar N, Afrakhteh M, Lary H. The effect of consumption date fruit on cervical ripening and delivery outcomes. Pajoohandeh Journal. 2015; 20(2):72–7. http://pajoohande.sbmu.ac.ir/article-1-1996-en.html
7. Razali N, Mohd Nahwari SH, Sulaiman S, Hassan J. Date fruit consumption at term: Effect on length of gestation, labour and delivery. Journal of Obstetrics and Gynaecology. 2017; 37(5):595–600. https://doi.org/10.1080/01443615.2017.1283304
8. Kordi M, Meybodi FA, Tara F, Fakari FR, Nemati M, Shakeri M. Effect of dates in late pregnancy on the duration of labor in nulliparous women. Iranian Journal of Nursing and Midwifery Research. 2017; 22(5):383–7. https://doi.org/10.4103/ijnmr.ijnmr_213_15
9. Bowman R, Taylor J, Muggleton S, Davis D. Biophysical effects, safety and efficacy of raspberry leaf use in pregnancy: a systematic integrative review. BMC Complementary Medicine and Therapies. 2021; 21:56. https://doi.org/10.1186/s12906-021-03230-4
10. Gholami F, Neisani Samani L, Kashanian M, Naseri M, Hosseini AF, Hashemi Nejad SA. Onset of Labor in Post-Term Pregnancy by Chamomile. Iranian Red Crescent Medical Journal. 2016;18(11):e19871. https://doi.org/10.5812/ircmj.19871
11. Hemmatzadeh S, Mohammad Alizadeh Charandabi S, Veisy A, Mirghafourvand M. Evening primrose oil for cervical ripening in term pregnancies: a systematic review and meta-analysis. Journal of Complementary and Integrative Medicine. 2021;20(2):328-37. https://doi.org/10.1515/jcim-2020-0314
12. World Health Organization. WHO Traditional Medicine Strategy: 2014–2023. Geneva: WHO; 2013. https://apps.who.int/iris/handle/10665/92455
13. Dolea C, AbouZahr C. Global burden of obstructed labour in the year 2000. Geneva: WHO; 2003. https://www.who.int/healthinfo/statistics/bod_obstructedlabour.pdf

14. Tajik P, van der Tuuk K, Koopmans CM, et al. Should cervical favourability play a role in the decision for labour induction in gestational hypertension or mild pre-eclampsia at term? An exploratory analysis of the HYPITAT trial. BJOG: An International Journal of Obstetrics and Gynaecology. 2012;119(9):1123-30. https://doi.org/10.1111/j.1471-0528.2012.03405.x
15. Carlhäll S, Nelson M, Svenvik M, Axelsson D, Blomberg M. Maternal childbirth experience and time in labor: a population-based cohort study. Scientific Reports. 2022;12(1):11930. https://doi.org/10.1038/s41598-022-14711-y
16. Vogel JP, Souza JP, Gülmezoglu AM. Patterns and outcomes of induction of labour in Africa and Asia: a secondary analysis of the WHO Global Survey on Maternal and Neonatal Health. PLoS One. 2013;8(6):e65612. https://doi.org/10.1371/journal.pone.0065612
17. El-Ardat MA, Obradovic Z, Saldo D, Velagic M, Omeragic A, Galijasevic N. The Effects of Date Consumption on Labor and Vaginal Birth. Medical Archives. 2025;79(1):56-60. https://doi.org/10.5455/medarh.2025.79.56-60
18. Al-Shahib W, Marshall RJ. The fruit of the date palm: its possible use as the best food for the future? International Journal of Food Sciences and Nutrition. 2003;54(4):247-259. https://doi.org/10.1080/09637480120091982
19. Hantooshzadeh S, Rezaeizadeh G, Nikfar S, et al. A Systematic Review of the Uterine Relaxant Effect of Potassium Channel Openers. Current Drug Discovery Technologies. 2013;10(4):263-9. https://doi.org/10.2174/15701638113109990002
20. Crowther CA, Hiller JE, Doyle LW, Haslam RR. Magnesium sulphate for preventing preterm birth in threatened preterm labour. Cochrane Database of Systematic Reviews. 2002;(4):CD001060. https://doi.org/10.1002/14651858.cd001060
21. Kauffman E., Souter V.L., Katon J.G., Sitcov K. Cervical dilation on admission in term spontaneous labor and maternal and newborn outcomes. Obstetrics and Gynecology. 2016 Mar;127(3):481-8. https://doi.org/10.1097/aog.0000000000001294
22. Makela K, Palomaki O, Korpiharju H, Helminen M, Uotila J. Satisfaction and dissatisfaction with pain relief and birth experience among induced and spontaneous-onset labours ending in vaginal birth: A prospective cohort study. European Journal of Obstetrics & Gynecology and Reproductive Biology: X. 2023;18:100185. https://doi.org/10.1016/j.eurox.2023.100185
23. Adler K, Rahkonen L, Kruit H. Maternal childbirth experience in induced and spontaneous labour measured in a visual analog scale and the factors influencing it: a two-year cohort study. BMC Pregnancy and Childbirth. 2020;20:415. https://doi.org/10.1186/s12884-020-03106-4 .
24. Hong J, Atkinson J, Roddy Mitchell A, et al. Comparison of Maternal Labor-Related Complications and Neonatal Outcomes Following Elective Induction of Labor at 39 Weeks of Gestation vs Expectant Management. JAMA Network Open. 2023;6(5):e2313162. https://doi.org/10.1001/jamanetworkopen.2023.13162 .
25. Rahnemaei FA, Kashani ZA, Jandaghian-Bidgoli M, Rahimi F, Zaheri F, Abdi F. The impact of the fruit and seed of date on childbirth stages and pregnancy complications. Sultan Qaboos University Medical Journal. 2024;24:483–90. https://doi.org/10.18295/squmj.12.2023.094
26. Caughey AB, Cahill AG, Guise JM, Rouse DJ. Safe prevention of the primary cesarean delivery. American Journal of Obstetrics and Gynecology. 2014;210(3):179-93. https://doi.org/10.1016/j.ajog.2014.01.026
27. Sheiner E, Levy A, Feinstein U, Hallak M, Mazor M. Risk factors and outcome of failure to progress during the first stage of labor: a population-based study. Acta Obstetricia et Gynecologica Scandinavica. 2002;100(5):709-14. https://doi.org/10.1080/j.1600-0412.2002.810306.x
28. Wong CA, Scavone BM, Peaceman AM, et al. The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. New English Journal of Medicine. 2005;352(7):655-65. https://doi.org/10.1056/nejmoa042573
29. Rouse DJ, Owen J, Hauth JC. Active phase labor arrest: revisiting the 2-hour minimum. Obstetrics and Gynecology. 2001;98(4):550-4. https://doi.org/10.1016/s0029-7844(01)01516-2
30. Karizaki VM. Iranian dates and ethnic date-based products. Journal of Ethnic Foods. 2017;4(3):204–9. https://doi.org/10.1016/j.jef.2017.08.002
31. Shahdadi F, Mirzaei HO, Daraei Garmakhany A. Study of phenolic compound and antioxidant activity of date fruit as a function of ripening stages and drying process. Journal of Food Science and Technology. 2015;52(3):1814-9. https://doi.org/10.1007/s13197-013-1177-6
32. Khallouki F, Ricarte I, Breuer A, Owen RW. Characterization of phenolic compounds in mature Moroccan Medjool date palm fruits (Phoenix dactylifera) by HPLC-DAD-ESI-MS. Journal of Food Composition Analysis. 2018;70:63–71. https://doi.org/10.1016/j.jfca.2018.03.005
33. Hemmateenejad, B., Karimi, S., Javidnia, K. et al. Classification and assessment of antioxidant activity and phenolic content of different varieties of date palm (Phoenix dactylifera) fruits from Iran. Journal of Iranian Chemical Society. 2015;12(11):1935-43. https://doi.org/10.1007/s13738-015-0668-y
34. Kordi M, Nasiri N, Safarian M, Esmaili H, Shadjuo K. The effect of oral honey-date syrup intake during labor on labor progress of nulliparous women. Iranian Journal of Obstetrics, Gynecology and Infertility. 2010;13(2):23-30. https://doi.org/10.22038/ijogi.2010.5861
35. Fathi L, Amraei K, Yari F. The effect of date consumption on the progress of labor in nulliparous women. Journal of Islamic and Iranian Traditional Medicine. 2018; 9(3):219–26. http://jiitm.ir/article-1-1029-en.html
36. Hinkaew J, Sahasakul Y, Tangsuphoom N, Suttisansanee U. The Effect of Cultivar Variation on Total Phenolic Contents and Antioxidant Activities of Date Palm Fruit (Phoenix Dactylifera L.). Current Research in Nutrition and Food Science Journal. 2020;8(1). https://doi.org/10.12944/crnfsj.8.1.14