

FRIENDLY ALTERNATIVE HEALTHY DRINKS THROUGH THE USE OF DATE SEEDS AS COFFEE POWDER

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Abstract

Dates (Arabic:*Tamar*, Latin:*Phoenix dactylifera*) is a native fruit from the Middle East and North Africa. This legendary fruit is very famous through around the hemisphere to get to the archipelago of Indonesia and has been cultivated since the Mesopotamia. Fruit plants, including palms (*Arecaceae*) has a distinctive sweet taste. Typically, the fruit is consumed as a dessert or snack even more so in the Holy Month of Ramadan. In addition to consumption of meat, it turns out the seeds can also be utilized. Date seeds are 10% of date palm fruit, has no flavour and a bit bitter, and also has no scent. Generally, the colour of Monocotyledonae dates seeds is light brown and dark brown. Dates seeds contain carbohydrate, protein, and fat. Dates seeds also contain many minerals, such as sodium (Na), potassium (K), magnesium (Mg), calcium (Ca), ferum or iron (Fe), manganese (Mn), zinc (Zn), cuprum (Cu), nickel (Ni), cobalt (Co) and cadmium (Cd). Ions are most plentiful mineral in the seeds of dates, namely potassium (K), magnesium (Mg), and sodium (Na). In addition to the nutrient content, date stones believed to health, such as: heartburn cure diseases, improve the immune system from free radical attack, and contain vitamins and fibre which is needed for the digestion of food. For main processing, first of all (1) preparing; (2) drying; (3) grinding, and (4) filtering. After the date seeds powder are ready, then we are able to mix it with warm ginger water, Indonesian herb drink. The combination of dates seeds and ginger give alternative health drink with low cost and friendly environment with less negative impact. Besides, these drink also able to be mixed with honey and/or milk to enrich the flavour. This paper provides an idea for modern people to consume health drink from popular fruit and herb.

Keywords: Dates seeds, Coffee powder, Healthy drinks.

INTRODUCTION

Harvard School of Public Health introduced the Healthy Eating Plate (figure 1) to stay active. It suggests that in our plate of meal should consist of 1) Water, 2) Whole Grain, 3) Healthy Protein, 4) Fruits, 5) Vegetables, and 6) Healthy Oils. Among those, we interested to explore more about Water component. This is because our body need water more than others nutrition. And on the other hand, our body it's self consist of much of water. We usually supply our body need of water from; 1) drink water, tea, or coffee, 2) some milk, and 3) juice. Consuming coffee is one of the most trends in the world, because this beverage in one of the most consumed beverage and become a supplement to support our daily activities. Many people consume it to start their daily activity in the morning breakfast, in break time, after lunch, even in the evening. Drinking coffee became symbol of socialization and friendship habit.

Coffee also has benefits such as; restore mental alertness or wakefulness during fatigue or drowsiness [1]. On the other hand, coffee always connected with the behaviour of smoking and alcohol. Coffee also produces caffeine in a more concentrated from than other foodstuffs [2] because coffee is a major source of caffeine [3], and there are some findings provide support for a relationship between coffee intake and higher blood pressure [4], etc. In this paper, we would like to introduce and popularize an alternative for coffee drink as healthy drinks. The written idea or innovation is from ancient classic fruit seeds and combine it with Indonesian famous herbal drink. Herbs and spices have a long history of both culinary use and of providing health benefits, as well as acting as preservatives [5].

The main idea is to replace the current coffee powder with new coffee powder made from date seeds. This idea could also open new entrepreneurship business challenge in beverage field for small and medium enterprise.

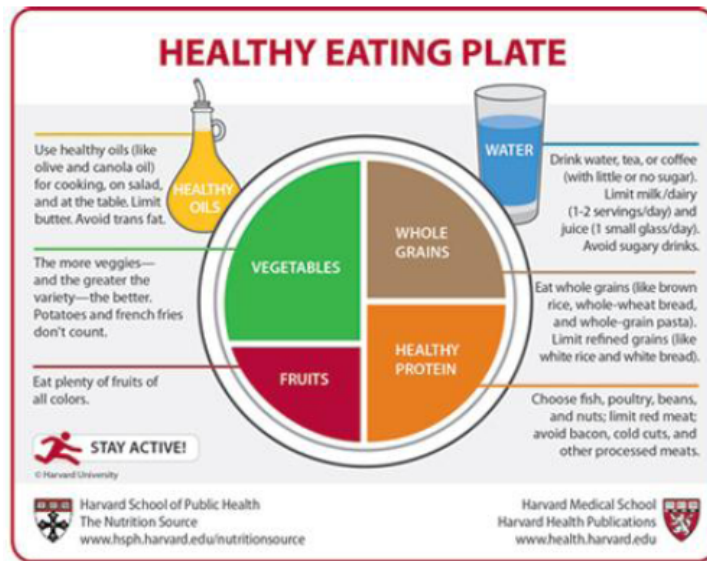


Figure 1. Healthy Eating Plate

This fruit is one of the most popular agriculture products from Middle East and Africa region. But in this paper we would more focus on the pit of the fruit instead. The term of ‘pit’ could also replace by ‘stone’ or ‘seed’ or ‘kernel’. And for the eaten fleshy part of the fruit use the terms of ‘date’ or ‘dates’. This ancient plant palm fruit is recognised by date palm (*Phoenix dactylifera* L.), as one of mankind’s oldest cultivated plants and has been used as food for about 6000 years [6] or more than sixty centuries, especially in the Arabian Peninsula and played a vital role in the life of its people [7]. It has always played an important part of the economic and social lives of the people of arid and semi arid regions of the world [8], such as; an important component of the diet in the Middle East and North Africa, as well as some parts of Central and South America and Southern Europe [9]. This palm date fruit also grows in Mexico, Chile, India, Italy, Spain and the south-western United States [10] for at least during the past three centuries including Australia and Southern Africa [11].

An international trade in spices dates back to 4500–1900 BCE, mainly with Ethiopia [5]. Nowadays, the annual world production of dates has reached 6-8 million mt, representing a market exchange value of over 1 billion USD [12]. The top five date-importing countries in 2004 were India, Pakistan, Yemen, Morocco, and UAE [11]. Where, top five producing countries of dates in the world for the years 2004 and 2005 were Egypt, Iran, Saudi Arabia, UAE, and Iraq with percentages 16.96%, 14.42%, 13.88%, 12.15%, and 9.29%, respectively [7]. These five producers equal to 66.64% of world production.

During the Holy Month of Ramadan, at the time of breaking fast in the evening, a few date fruits are eaten [13], usually three date fruits. The date is composed of a fleshy part with a seed inside. Dates could be used to meet part of the nutritional requirements of people’s food [6]. Almost every part of date could be useful. Various products of date processing industries could be regarded as an excellent source of food ingredients with interesting technological functionality that could also be used in food as an important source of sugar, mineral elements and energy [6]. The dates could be consumed as fresh fruits at Khalal and Rutab stages (short shelf- life), or at Tamer stage (good storability) [6].

Normally, human made some products from the fleshy part of the date. The fleshy eaten part already common being produced as; date chocolate, date honey, date juice, date syrup, date jams, date paste, etc.

Other part of date is date seed/pit. Date seeds or date pits are usually discarded as materials with no use or value [14]. Date seeds are considered as waste from palm date fruit. In the United States, date pits have been a problem to the date industry as a waste stream. Pulverized ground date pits are being used on a small scale, on dirt roads as a type of road base gravel [15]. Occasionally, in the Middle East, date pits are used in animal feed [15], such as; for cattle, sheep, camel and poultry industries [16] and also goats and horses. Date seeds can also be chemically processed to produce up to 65% oxalic acid or burned to produce charcoal for silversmiths. The seeds are also often strung into necklaces [12] or as beads for decoration [11] or could be used in cosmetics (manufactured into soap [11]), pharmaceuticals and food [15, 17] such as mayonnaise [18]. Date seeds may have extractible high value-added components [8] and were examined because they may have an extractable high value-added components for including in functional foods [15], for example edible oils for human consumption [13, 19]. Seeds also are often roasted, crushed and used in some countries as an extender to coffee or flour [12]. In the Arabian Peninsula, date palm seeds are used not only as a staple food but also to make coffee [20]. Even some papers inform the usefulness of date seeds for coffee, but less of them focused to discuss it further. In this paper we will review date seeds as a possible alternative drink. Date seeds will be used for the main material for coffee powder. We would like to popularize the date seeds with its health benefits by processing it in similar way as the processing of coffee beans powder.

Ginger (*Zingiber officinale* Roscoe (Zingiberaceae)) is used worldwide as a cooking spice, condiment, and herbal remedy [21], and supplements derived from ginger have received attention for the treatment of chronic inflammation [22]. In Indonesia, ginger widely used for beverage, for example; 1) bajigur, 2) bandrek, and 3) sekoteng. In China, ginger is used for at least 2,500 years as digestive aid, antinausea, and rheumatism. In Arabian medicine, ginger is considered as an aphrodisiac. And in Africa, consuming ginger regularly will help repel mosquito [21]. In Asia, Ginger already used in many dishes, but also in cakes, biscuits, desserts and with fruit and juices [5]. The main producers of ginger are India (~30%), China (~20.5%), Indonesia (~12.7%), Nepal (~11.5%), and Nigeria (~10%) [23]. In this paper, authors will use ginger water to be mixed with date seeds powder.

By understanding the nutrition from those spices and herbs, open the opportunity to create a new variant of innovative healthy drinks. This paper also gives new idea to take a profit on the pits, because less people realize that date pits/seeds could be used for something useful, for drink as an example.

In this paper we describe our idea in providing new innovative healthy drinks from date seeds combined with ginger by create an alternative material for the coffee powder. This idea is that the most people need and like to consume such a drink like coffee. We improve this habit by using healthy drinks above.

We describe materials and method in Section 2, followed by results and discussion in Section 3, and we conclude in Section 4.

MATERIALS AND METHOD

Materials

The main material for this innovation drink product is taken from the date palm seeds, and combined with ginger.

1. Date Seeds

Dates are single-seeded fruits of a cylindrical, rounded or ovoid shape, with a fleshy sweet mesocarp covered with a thin epicarp, somewhat yellowish to reddish brown in colour [12]. Generally, the colour of Monocotyledonae dates seeds is light brown and dark brown. Date pits were odourless and a bland taste with slight bitterness [15]. Some date seeds appears slim and dark, while some others looks fleshy and light. The approximately weight of the seed of the completely riped date fruit are around 5.6-14.2% [24], 6-12% [25], 10% [13], 18.34% [26], depending on variety and quality grade. Authors believe that averagely, date seeds constituting about 10% by weight of the whole fruit.

2. Ginger

Ginger (*Zingiber officinale*) is used worldwide since ancient time as a cooking spice, condiment, and herbal remedy [21], and supplements derived from ginger have received attention for the treatment of chronic inflammation [22]. Ginger already used in many Asian dishes, but also in cakes, biscuits, desserts and with fruit and juices [5]. Rhizomes are eaten raw or cooked as vegetables and used for flavouring food [27]. An evidence for efficacy of ginger in treating symptomatic osteoarthritis [5]. In Indonesia, ginger widely used for beverage, for example; 1) bajigur, 2) bandrek, and 3) sekoteng. In this paper, authors will use ginger water to be mixed with date seeds powder.

3. Butter

Butter is a product made from the solid components in milk (fat and protein). Although most often made from cow's milk, butter can be made out of milk from sheep, goats, buffalo, or other mammals. Butter is used in roasting stage. When roasting the date seeds, we add some butter to give the crunchy texture of the roasted date seeds.

Methods

Producing date seeds as powder involving roasting and grinding the date seeds in similar way as for coffee beans [16]. We add some butter in roasting stage to make the date seeds easier to be grinded. For processing, first of all (1) preparing; (2) drying; (3) grinding, and (4) filtering. After the date seeds powder are ready, then we are able to mix it with warm ginger water, Indonesian herb drink.

1. Preparation.

First of all, we must prepare the date seeds. There are two possibilities to get the date seeds: a) we can collect them from waste date seeds; from industry which use date as their main materials, or b) we can buy the date fruits, but if buy the date fruits then we need to separate the date seed from the date fruit.



Figure 2. Date fruit and date seed

2. Soaking

The prepared date seeds were soaked in tap water. Then soaked date seeds were washed properly without any detergent to remove any adhering date flesh. In this stage, we can do fermentation to eliminate any mucilage still stuck to the date seeds and helps to improve beverage flavour [28].

The fermentation stage therefore gave coffees richer in volatile compounds, and even more so if fermentation was carried out in water. The fermentation stage is therefore important for ensuring the aroma quality of green coffees [28]. But in this paper, authors will not discuss further about fermentation.

3. Drying

The cleaned and prepared date seeds need to be dried under the sun or using microwave. If we dry them under the sun, it will take two days. Or we use oven to dry them [26].

4. Frying or roasting

Dried-date-seeds then roasted with medium temperature for few hours. After the date seeds become ripped then add some butter. The addition of butter to make the texture of date seeds become crunchier.

5. Grinding

After the roasted date seeds are quite charred then we grinded into grinder machine or blender. Palm date seeds were milled into two fractions: fine and coarse [29]. Finally we got date seeds powder (fine). But sometimes, we could use the coarse powder as well.

6. Filtering

To get the best powder, we need to filter the date seeds powder using a sieve. The rest of the sieved powder are considered as coarse date seeds powder.

7. Serving

After we get the powders of the date seeds then we are able to used it as the main material for our healthy drinks.

Processing ginger

The second material for this drink is ginger water. We use the rhizomes of gingers. Firstly, cut the cleaned gingers into small pieces by a chopper/cutter/knife. Then, dried them. After that, the dried slices ginger ready to be milled. To get strong taste of the ginger water boiled them in hot water, and filter to get fine water ginger water.

RESULTS AND DISCUSSION

Date pale fruits not only used for food but also for beverage. This paper give information about the alternative for coffee drink made of date seeds. By processing the date seeds become powders like coffee beans, we could make various drink combination. After we got the date seeds powder, then we can use it as a coffee. To make a cup of healthy drink coffee, we add boiled hot water into a cup of date seeds powder then mixed them properly. Or, we could put the coffee date seeds powder into a cup of water then boil them together. We also able to use fine or coarse date seeds powder.

Date coffee drink for stamina

The first possibility is for classic coffee drink. We prepared boiled water and date seeds powder. Put date seeds powder into a coffee cup, then put hot boiled water for a half of the cup. The rest of the cup should be added with hot ginger water. And the last ingredient could be added with granulated sugar or honey or milk. The percentage of glucose and fructose in date seeds equals 10.8% and 7.3%, respectively [24]. This date coffee with ginger water is good for stamina. Glucose is the main source of energy by providing immediate energy to the cell. Our body could use fats and proteins, but our body need to convert them first. Consuming two cups of date coffee drink will supply glucose to our body.

Date coffee float drink

The second possibility from the date seed powder is for cappuccinochoco float. We could mixed date seeds powder with: 1) chocolate powder, 2) milk powder, 3) creamer, 4) granulated sugar, and 5) shaved ice. After we blend them together, put chocolate ice cream on it.

Date coffee for diet

Date seeds are by-products that could be an excellent source of fiber [30, 31] because they contain high proportions of fiber [25]. Pits contained a large quantity of fibre that may have health benefits [15]. Some researchers reported the amount of fibre are about; 1) 6.4- 11.5% [24], 2) 10-20% (FAO 1999) [32], 3) 65–69% neutral detergent fibre [15], and 4) 75–80% [30], depending on various varieties and degree of ripeness. Date palm seeds show that the mineral ion concentrations are within the dietary intake level in humans [20]. Where fiber is very useful in health and disease [24], and also needed for the digestion of food. Consuming date coffee will supply of fiber needs.

Date coffee Nutrition

Date seeds are rich in oil, proteins, minerals, and fiber [9][13], Vitamin C 0.137%, [29][33]. The date pits, from various cultivars, contained significant amount of important minerals [14, 16, 30], such as; Sodium (Na), Calcium (Ca), Potassium (k), Iron (Fe), Copper (Cu), Phosphorus (P), Magnesium (Mg), Zinc (Zn), Manganese (Mn). Pits of date palm had beneficial effects on male reproductive activity and improve sperm quality and enhance fertility in the male adult rat [35]. Need further investigation in humans.

Date coffee is low cost and friendly environment

Dates are cheap to produce and preserve, and are also very rich in nutrition [24]. The main material to make the date coffee is from waste product of date palm fruits, therefore the cost less or inexpensive [15, 36] and also influence positive for green environment. This healthy drinks has potential impact for human nutrition without negative impact for environment.

CONCLUSION

To conclude, this paper provides an idea for modern people to consume healthy drinks from popular fruit and herb. Considering nutrition of date seeds, we believe that date pits could be used to replace the coffee powder for coffee drink. Authors choose the date seeds and ginger water for the main materials because these materials easy to get and the cost are not really expensive. This paper also gives additional knowledge about:

- 1) Dates is not only consumed by its flesh but also its seeds.
- 2) Date seeds powder could be use to substitute material for coffee.

- 3) The seeds of dates are useful for healthy drinks.
- 4) Healthy drinks do not always from expensive materials, we are able to create them from waste and un-useful material.
- 5) The idea to mix date seeds coffee with ginger water is limited.
- 6) This creation could be use to introduce new drink menu.
- 7) This drink could be added by honey or milk to enrich the flavour.
- 8) Support for green environment.

Further investigations are needed to open the possibilities to: 1) explore more about using additive treatments to process the date seeds, 2) create peeler machine to separate fleshy part of date from the pit, 3) various serving of coffee dates pits, 4) and branding, labelling, marketing the coffee date seeds.

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