

# The Use of Dates against COVID-19, based on Effectiveness or Religion's Believe? Trends and Relevance Analysis in Big Data

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## ABSTRACT

The use of drugs for treating Covid-19 causes several side effects to patients. Plants can be used as an herb in treating COVID without serious side effects. This study has an objective to observe the relation between trends of information about dates, the reason that caused the trends, as well as its benefit to COVID cases in samples of the study. The samples are Indonesia and Saudi Arabia. The inclusive criteria of samples are topic related to dates used on the internet and popularity points of information about date palm. The data are analyzed using Vosviewer software to find out how strong the relevance of certain topics with date palm. The result shows that trends are more robust in Saudi than in Indonesia. The relevance point about dates in Saudi reaches 14 while Indonesia is 8.05. One of the reasons because dates have been consumed by Saudi people since ancient times, while Indonesia later. Another reason is because Saudis are mostly Muslims, while Indonesia consists of multiple religions. The result also shows that COVID cases in Saudi are decreased more than Indonesia.

**Keywords:** Big Data, Dates, Indonesia, Muslim, Saudi Arabia

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## INTRODUCTION

SARS-CoV-2 are still roaming around the world as long as there is no definite discovery of new antiviral drug which is indeed effective against SARS-CoV-2 (Rothan and Byrareddy, 2020). The new vaccine based on the antigen of this virus is still currently being developed and still needs a long time to be able for use in clinical trials (Shoenfeld, 2020). The prototype of the vaccine requires a huge amount of effort, as well as money and manpower to be completed. A lot of variable of SARS-CoV-2 because of mutation affects the time-consuming work in deciding which antigen is exactly appropriate in preparing antibodies (Lurie et al., 2020).

To cope with the difficult situation, the local government of each country instructs all of the society to follow the rule of the medical protocol assigned by the legal medical experts appointed by the government. One of them is by doing distancing themselves with the others to minimize physical contact since the SARS-CoV-2 is issued to disseminate through physical contact between humans. Another is by doing lockdown of the region or city with a high number of positive COVID cases. But such regulations are highly doubted by many societies, since many countries are geared toward economic recession because of the minimal economic activities and development.

Another way is through the consumption of drugs. There are some drugs issued by each federal government such as Remdesivir which has been approved by Food & Drug Administrator in the USA, Avigan by Russia ministry, and still under research by Toyama Chemical of Japan, and Dexamethasone by the government of UK (Rome and Avorn, 2020). But drugs contain side effects on the human body and cannot be used in a long time. Since there is no definite research or study which can make sure that patient who is cured from SARS-CoV-2 cannot be infected again, drugs cannot be used continuously toward patients in a long time (Nishiura et al., 2020).

The safer way to treat patients with COVID cases is through herbal medicine since plants have fewer side effects than drugs and can be consumed daily, except it needs a prescription from the doctor for patients with complicated organ problems (El Abed et al., 2018). Dates are one of the fruits that has antiviral anti-fungal properties. Since no person has malnutrition in consuming dates as well as there is no side effect reported as a result of dates, it can be used as an alternative in the emergency (Hafez et al., 2020).

Luckily, we enter industrial revolution four where all data integrated online on the web so that any information related to COVID is stored and shared through big data across the world. Similar to COVID, the information related to drugs or herbs that can be used for treatment against COVID symptoms can be found on the internet and updated by other internet users (Wang et al., 2020). Based on the background above, this study has an objective to observe the relation between trends of information about dates, the reason that caused the trends, as well as its benefit to COVID cases in samples of the study.

## Method

### Sample of the Study

The samples of this study are Saudi Arabia as the source of dates as well as the place where Prophet Muhammad was born and becomes the key figure in the Islamic world. Another sample is Indonesia as the country which has the biggest number of Muslims in the world (Hussain et al., 2020). The inclusive criteria of the samples are an Islamic country, their society consumes dates in daily life, have a considerable number of internet users, and have a lot of positive cases of COVID-19. The duration of collecting samples is starting on the 2<sup>nd</sup> of March 2020 as the first case of COVID was found, both in Saudi Arabia as well as in Indonesia, until recently on 26 of July 2020.

This study observes the keyword of “date palm” or “dates” as a type of fruit that is consumed as an alternative medical treatment against COVID-19 on the internet. The data are classified into two types, based on the popularity, and based on the topic. Saudi Arabia has 28 topics related to dates, while Indonesia has 26.

**Method of Collecting and Processing Data**

This study is a quantitative type using a data mining approach in gathering samples of data. The data are gathered through Google trends as free platform to analyze and observe data sources in the network (Asnawi *et al.*, 2018). The data related to popularity is viewed as a graphic to show how the trend is going.

The graphic then cropped using snipping tools and added into the text (Wardhana, 2020). The data related to the topic are downloaded from Google trends in CSV format and analyzed using Vosviewer software. The result will be shown the number of Occurrences and relevance point of the topic. Occurrence is the frequency of how many a keyword appeared in a topic. The relevance point shows how strong a topic is related to a keyword “date”. The relevance point is measured from 0-15, but not the entire topic which contains a keyword dates has relevance point, depending on how many a keyword is being discussed inside a topic (Tayefi *et al.*, 2017).

**Result and Discussion**

**Table 1.** Total of occurrence of relevance point of topic related to dates in Saudi Arabia big data

Term	Occurrences	Relevance Score
Agriculture	1	0
Arabic	1	0
arabic coffee breakout	1	0
Banana	1	0
Bees	2	0
biocide breakout	1	0
Breakout	1	0
Category	2	0
computer cluster	1	0
computer cluster breakout	1	0
date palm	1	14
Dates	1	0
djerid breakout	1	0
fertilisation	2	0
Fruit	1	0
Honey	2	0
Insect	1	0
insect breakout	1	0
Nut	1	0
nut breakout	1	0
nutrition fact	2	0
palm tree	2	0
rhynchophorus ferrugineus	1	0
root breakout	1	0
saudi arabia	1	14
Top	1	0
Vaccine	1	0
vegetable breakout	1	0

Table above shows a lot of topics contains keyword of dates. But there are only 2 topics which are closely connected to dates itself. The topic "dates" and "saudi arabia" has relevance point of 14. Other topics related to plant such as "vegetable breakout", "root breakout", "nut breakout", "arabic coffee breakout" means that the stock is so massive that cannot be completely absorbed by society or market demand. It means that besides dates, that ingredient also consumed along dates in daily lives. There is also a topic "vaccine" which is closely related to a topic about virus, which means that dates are also

considered as important as a vaccine in treating COVID-19 cases. [2]

Saudi Arabian are known as suppliers of dates to other countries. Saudi's citizen has been accustomed to eat dates since ancient times. Moreover, the religious belief of Islam known as hadith suggested the Muslims to consume dates regularly to keep healthy (Ali et al., 2018). Anas bin Mali states that The Prophet Muhammad used to break his fast before praying with "ruthab" (wet dates). The population of Saudi people who consists of 93% Muslims support the way of thinking in consuming dates as the advice from Prophet Muhammad (Tamizi, 2017).



Figure 1. Information trends of date palm in Saudia Arabia Big data

The figure above shows that the trends of information demanding about dates are fluctuating. The popularity points hit the peak on the 24<sup>th</sup> of April 2020. The first day of Ramadhan is the cause behind the peak of information demand. When eating dawn or "suhoor", sugar stores in the body will continue to decline due to various activities as a result of "Iftar" or fasting. Blood sugar itself is the main energy source in the body, which causes weakness and drowsiness when the levels are below normal. Dates are a very good source of fiber, sugar, magnesium, potassium, and carbohydrates that will help the body to maintain health. Carbohydrates found in dates also make fruit slower to digest food, far better than fried or fatty foods that digest quickly and make people hungry more. Dates can become the best source of nutrition for the body during break time after Iftar.

Moreover, dates are the source of Flavonoids, powerful antioxidants that can help reduce inflammation and have been investigated for their potential to reduce the risk of diabetes, Alzheimer's disease, and certain types of cancer. Dates also source of Phenolic acid, known for its anti-

inflammatory properties to reduce the risk of cancer and heart disease. As a result, dates can become the most important food for breaking the fasting/iftar besides staple food such as rice or bread (Kehili et al., 2016).

Dates contain organic Sulfur (Sulfur) which is rarely found in other foods. Organic Sulfur compounds are beneficial for people suffering from Seasonal Allergic Rhinitis (SAR) or Seasonal Allergy Rhinitis. Rhinitis is inflammation of the lining of the nasal cavity due to allergic symptoms or not due to allergies. Organic sulfur can also help the body to create powerful antioxidants called *glutathione* which can increase the immunity system. As a result, dates become popular as alternative medical treatment to COVID-19 that consuming drugs which have more hazard side effect. The figure above shows that the trends of information of dates have rarely reached the bottom point and stay popular until recently. It can be said that more Saudi citizens are in favor to find out information about dates more at a time conduct a discussion about dates.

Table 2. Total of occurrence of relevance point of topic related to dates in Indonesia big data

Term	Occurrences	Relevance Score
Bam	2	0
Calorie	1	0
Category	2	0
coconut water	2	0
date honey	1	0
date palm	1	8.0588
Egypt	1	0

egypt11	1	0
Egyptian	2	0
Energen	1	0
Fruit	1	0
Honey	1	0
Indonesia	1	8.0588
Infusion	1	0
Juice	1	0
Karma	1	0
Medina	1	0
Medjool	1	0
Milk	2	0
palm tree	2	0
Salman	2	4.9412
saudi arabia	2	4.9412
Sugar	1	0
Top	1	0
Tunisia	2	0
Valley	2	0

Table 2 shows that there are a lot of topic related to dates also in Indonesia big data. but the relevance score of certain topics are lower than Saudi's. the topic "Indonesia" and "date palm" itself has relevance score of "8.05". it means that fewer internet users in Indonesia conduct in discussion related to dates than Saudi as it reflected in the table above. Although Indonesia has a lower relevance point, there are several topics which are shown as kinds of dates consumed by Indonesian people such as "tunisia, valley, egypt, medjool, and medina". There is also topic "energen", the brand of cereal in

Indonesia, which surprisingly also has dates type as one of the cereals.

Table 2 also shows the topics "Salman" and "Saudi Arabia". There is a fact that King of Saudi, Salman, told that his favorite dishes in the morning are milk and dates, when invited by Current Indonesian President, Jokowi in his palace in 2017 (Negara, 2017). Such an event can influence Indonesian people to consume dates more as breakfast, since most of the population of Indonesian are Muslims. It is depicted on the table above that there is also a topic of "milk" which can be related to the favorite breakfast for King Salman (Istadiyantha, 2018).



Figure 2. Information trends of date palm in Indonesia Big data

Figure 2 shows that the trend of information is static and reached its peak in 24 of April 2020. Similar to Saudi Arabia, it is due to the first day of Ramadan, where consuming dates is an obligation for Indonesian Muslims. Different from Saudi, the trends dropped significantly and keep unchanged until recently. Different from Saudi which consists of 93% of Muslims, there are other religions besides Islam.

Islam came to Indonesia in the 7<sup>th</sup>-13<sup>th</sup> century when the indigenous religions of Indonesia at that time are Hindu and Buddha. Islam was disseminated first by merchants from Persia and later was immersed deeply by adjusted with indigenous culture know by "Wali Sanga". They consist of nine people whom their teachings later become the foundation of Islam in Indonesia, as well as the foundation of Indonesia multicultural ideology,

"Pancasila" (Karim, 2018). It can be inferred that the tradition in eating dates in Indonesia are later than Saudi. Moreover, the medical protocol in treating COVID-19 is depending on the regulation by the medical authorities and government. From the first period of COVID cases until the end of April, medical authorities in Indonesia used Chloroquine for clinical trials (Djalante *et al.*, 2020). Then, started in June, Dexamethasone is used for COVID cases treatment. As a result, people are more favorable in searching for information about those 2 drugs rather than dates as medical treatment (Ardila Syakriah, 2020). The COVID-19 outbreak in Indonesia also influenced the selling rate of dates in Indonesia while Ramadhan 2020. Makasar, Solo, and Jakarta are the example of the city which has affected by COVID-19 (Turista *et al.*, 2020). Although dates have many health benefits as well as the potential for herbal medicine, the authorities in using Chloroquine by the ministry of health is the beneficial factor in deciding the trends behind the consumption of dates for treating COVID-19. Moreover, Jokowi also stated that the government has claimed that Chloroquine succeeded in slowing down the increasing number of positive cases, although it is not the main drug for treatment (Dilaruri and Rahmawati, 2020).

According to Worldometer, Indonesia COVID cases per day fell from the peak on 9 of July which reached 2657 cases into 1492 cases on 26 July ("Indonesia Coronavirus Cases," 2020). Saudi COVID cases per day also fell from peak point on 17 of July 2020, which reached 4919 cases, into 1968 cases ("Saudi Arabia Coronavirus Cases," 2020). In this case, the Saudi case number decreased more than Indonesia.

The consumption rate of dates per capita in Saudi reached the 2<sup>nd</sup> of the biggest countries of consuming dates after Oman, reached 28-30 kg/capita (Helgi Analytics, 2020). Indonesia consumption rate of dates only reached 0, 07 kg/capita in 2017 (Sitio *et al.*, 2016). It can be concluded that the higher the number of dates consumed is, the lesser COVID cases addition on a daily basis.

### Conclusion

Based on the result above, it can be concluded several things. First, Saudi people have been consuming dates since ancient times. The culture of date consumption in Indonesia has not existed in the past until Islam was introduced in the 7<sup>th</sup>-13<sup>th</sup> century. Second, dates consumption has been recommended in hadith for Muslims by Prophet Muhammad, which causes Saudi to consume earlier, because Saudi is the birthplace of the prophet itself. The regulation of using Chloroquine in Indonesia by the Ministry of Health also affects the consumption rate of dates, which lead to the lower trends of information on the internet. It can be seen from the result that Saudi COVID cases are decreased more than Indonesia as a result of dates consumption.

### Acknowledgment

This study gathers the data using the data mining technique and has not used any participants as a sample. This study follows the procedures that were accordant with the ethical research principle based on the regulation of the research ethics committee. The present study was carried out following the research principles. This study implemented the basic principle ethics of respect, beneficence, nonmaleficence, and justice. The author reports no conflict of interest in this work and guarantees that there is no one in the future. This

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