

Honey-borne infant botulism in tahnik practice: an explanation of the risk and its solutions

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Abstract

Tahnik is a primarily Islamic practice wherein a newborn's palate is daubed with dates or honey. However, feeding honey to an infant has been associated with numerous infant botulism cases. This situation has raised the question of how a religious practice could lead to such a severe health risk? The objectives of the study were to investigate: a reliable method of performing tahnik; the original proposition of using honey in tahnik; and the efficacy of using ingredients other than dates in tahnik. Semi-structured interviews and armchair research methods were utilised to gain data from three Islamic scholars. Other resources were also consulted, including the United States Department of Agriculture (USDA) Food Composition Database and various Islamic Literary Manuscripts. The findings indicated that the use of honey in tahnik did not originate within Islamic jurisprudence. Therefore, it should not be associated with the Prophet's Sunnah. When dates are not available for tahnik practice, then raisins, figs, pomegranates, grapes, or other sweet fruits can be used as a replacement rather than honey.

1. Introduction

The Arabic term for feeding sweets to a newborn baby is 'tahnik,' which is a familiar practice in Islam. In the Malay custom, it is also referred to as 'belah mulut' which literally 'mouth splitting' (Ahmad, 1993). Usually, tahnik is performed using dates that will be masticated (to soften it) by religious figures or pious people and then be daubed on the palate of a newborn infant. Dates are preferred over other substances in the tahnik because of the sweetness of the fruit and its health benefits, 100 g of dates contain around 314 kcal, are high in fibre (8.0 g/100 g) and a good source of antioxidants, and provide approximately 15% of the recommended daily allowance of several key minerals (Al-Farsi and Lee (2008). However, when dates are not available, honey has been proposed as a substitute (al-'Asqolani, 2017; Mualifa, 2017). Feeding dates to newborns does not present any issues, but a replacement with honey—especially for those less than twelve months of age—has been associated with numerous cases of infant botulism infection. This is a serious health condition that can lead

to death (Midura *et al.*, 1979; Tanzi and Gabay, 2002; Nevas *et al.*, 2005; Wikström, 2017). The danger arises because honey possesses the risk of being contaminated with *Clostridium botulinum* spores (Grabowski and Klein, 2017; Bittmann *et al.*, 2019; Mohd Tamrin, 2020). Infant botulism occurs due to the release of botulinum neurotoxin (BoNT) during the *C. botulinum* reproduction process after it invades the baby's stomach (Arnon *et al.*, 1979; Panditrao *et al.*, 2020). In babies under the age of one year, the microflora of their still-immature intestine allows *C. botulinum* bacteria to germinate and colonise the stomach. This results in the absorption of BoNT by the intestine (Schocken-Iturrino *et al.*, 1999). Sudden infant death syndrome has also been associated with the symptoms of this infection (Thompson *et al.*, 1980).

Muslims believe that every Sunnah of the Prophet Muhammad (p.b.u.h.) will not cause any harm as it is a revelation from Allah (s.w.t.) (Holy Quran, al-Najm [53]: 3-4; Mohamad *et al.*, (2015); Harun (2016); Baharuddin *et al.* (2019). This includes tahnik. However, the honey-borne infant botulism cases have raised a

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question of how the Prophet's divine Sunnah could lead to possible health risk in infants. To answer that question, this article discusses the reliable method of tahnik as performed by the Prophet (p.b.u.h.), the original proposition of using honey in tahnik practice and the acceptance of using ingredients other than dates in tahnik. Finally, this article suggests other ingredients as a replacement for honey when dates are not available.

Originally these toxins were considered to be found in soil and air, but studies have also found these toxins to be present in honey (Sugiyama *et al.*, 1978; Palmer *et al.*, 2019). On average, around 0.5% -8.5% of honey available in the market are contaminated with the toxin as shown in Table 1. Analysis by Tanzi and Gabay (2002) also found that the consumption of contaminated honey—evidenced by honey samples testing positive for the presence of *C. botulinum* toxin—is associated with infant botulism throughout the United States of America. It is of particular concern that the honey contaminated with *C. botulinum* did not differ in smell, colour, or taste from pure honey, thus making it very difficult to identify (Arnon *et al.*, 1979; Grenda *et al.*, 2018). As a result, it is recommended that infant consumption of honey be avoided if at all possible.

Table 1. Percentage of honey samples positive with *C. botulinum*

Substance	Contaminated Samples	Percentage	Source of Study
Honey	1 out of 197	0.50%	Maikanov <i>et al.</i> (2019)
Honey	1 out of 61	1.64%	Joanna <i>et al.</i> (2020)
Honey	6 out of 70	8.50%	Grenda <i>et al.</i> (2017)
Honey	2 out of 100	2%	Kauiter <i>et al.</i> (1982)
Honey	2 out of 53	3.70%	Sugiyama Sugiyama <i>et al.</i> (1978)
Honey	6 out of 85	7.06%	Schocken-Iturrino <i>et al.</i> (1999)
Honey Producer	10 out of 153 producers	6.50%	Sugiyama <i>et al.</i> (1978)

Scientists and doctors have implemented this same concept (and one similar to tahnik) as an alternative form of pain relief for preterm infants, such as giving them sucrose before and after injections. Typically, pain relief would be provided by administering paracetamol, but this is very restrictive in the case of preterm infants (Swapnil *et al.*, 2017; Valeri *et al.*, 2018). The aforementioned medical practice has obvious similarities to the practice of tahnik, a procedure proposed by the Prophet Muhammad (p.b.u.h.). In essence, administering sucrose to a premature infant can have a pain-relieving effect. It can calm the baby, normalise its breathing, and stabilise its blood oxygen levels (Valeri *et al.*, 2018). A

study carried out by Beuno (2013) concluded that sucrose sweetmeat found in fruit nectar can be used for pain relief (as an analgesic) for babies. Therefore, other painkiller drugs—like paracetamol—can be avoided in the early treatment of infants. Additionally, research carried out by the Royal Children's Hospital in Melbourne, Australia, determined that oral sucrose is safe and effective for reducing procedural pain from a single event. This proves that the tahnik practice by Prophet Mohammed (p.b.u.h.) of feeding small amounts of date flesh to newborns is not only significant and effective but also consistent with the evidence of modern science.

2. Materials and methods

This study combined a semi-structured interview and armchair research methods to attain more comprehensive findings. The objectives of the study were to investigate: a reliable method of performing tahnik; the original proposition of using honey in tahnik; and the efficacy of using ingredients other than dates in tahnik. We interviewed three Islamic scholars, including two members of the State Fatwa Council, along with a Syariah academic. The study ended at the third respondent due to the data saturation achieved based on the similarity of answers given by the respondents. For the last objective, i.e., to find suitable substitutes for dates in tahnik, we performed a descriptive analysis of the USDA Food Composition Databases (2021). Finally, all data were analysed and discussed, together with the support of Islamic manuscript literature, to strengthen the main findings and to provide more comprehensive final research findings.

3. Results and discussion

3.1 The correct method of tahnik is using dates, not honey

The proper method of performing tahnik is to feed newborns dates, not honey, as explained by all three respondents (Syariah scholars) and three literature sources of tahnik. Further, there is no single reference—either from the Holy Quran or hadiths (prophet sayings)—to the use of honey in tahnik. The only substance ever used by the Prophet (p.b.u.h.) in tahnik is dates. The findings are shown in Table 2.

Based on these quotations, the Prophet (p.b.u.h.) used only dates in all tahnik practices. Therefore, the encouraged way of tahnik practice is with dates, and the use of honey does not coincide with the Prophet's Sunnah.

Table 2. Findings: dates as reliable method of *tahnik*

Sources	Quotations	Substance used in Tahnik
Respondent 1	“Only dates are mentioned in the hadiths.”	Dates
Respondent 2	“The Prophet practice in <i>tahnik</i> is by dates. I never read a single narration that mentioned the application of honey.”	Dates
Respondent 3	“There is no hadith that has mentioned honey application by the Prophet (p.b.u.h.) as he only used dates in all <i>tahnik</i> practices.”	Dates
Islamic manuscript literature (al-Bukhari, 2018, p. 78)	“Then I went to the Prophet and laid my son in his bosom. Then Rasulullah (p.b.u.h.) asked for dates and softened them in his mouth, then spit into my son’s mouth.”	Dates
Islamic manuscript literature (al-Bukhari, 2018, p. 109)	“The Prophet Muhammad took the baby and asked: Do you have something? I replied: Yes I have dates. So Rasulullah (p.b.u.h.) took the dates and softened it in his mouth.”	Dates
Islamic manuscript literature (al-Bukhari, 2018, p. 108)	“When my son was born, I brought him to the Prophet. So he named him Ibrahim. Then the Messenger of Allah daubed the upper part of my son’s mouth with dates.”	Dates

3.2 *The recommendation of using honey in tahnik originated from some scholars’ views, but not from the Prophet (p.b.u.h.)*

After determining that the use of honey does not derive from the original *tahnik* practice and was never recommended by the Prophet (p.b.u.h.), we explored how the recommendation emerged in the practice. Respondents said that the recommendation came from local custom when the sweetness of honey was seen as comparable to that of dates. However, a study of the Islamic manuscript literature found that the recommendation of using honey in *tahnik* specifically came from some previous Muslim scholars, such as al-Asqalani (2017), al-Kaurani (2008), and al-Muzhiri (2012). Those findings are shown in Table 3.

These findings show that the use of honey should not be associated with *tahnik* practice as originating from the Prophet Muhammad (p.b.u.h.), but rather, it is an opinion of some Islamic scholars based on their *ijtihad* (analytical view). However, this opinion does not impair the credibility of their judgment as it was based on the medical technology/research at that time, i.e., al-

Asqalani in the fourteenth century. At that time, the effects of giving honey to infants were still unknown. It was not until around the nineteenth century that *Clostridium botulinum* was discovered (Smith *et al.*, 2018), which is 400 years after al-Asqalani’s view. No doubt, the reason for the scholars’ recommendation was the similar sweetness of the honey as with the dates, as mentioned by the third respondent.

In addition, there is a possibility that these scholars’ views have been assimilated into *tahnik* practice with the Malay local customs referred as ‘*belah mulut*’ (translation: mouth splitting). This can be seen in a variety of Malay manuscripts that listed honey as one of the ingredients for the practice.

The method of *belah mulut* (mouth splitting) is described in *Ensiklopedia Perbidanan Melayu: Sebuah Perbendaharaan Ilmu Perubatan dan Penjagaan Kesihatan* (translation: the Encyclopedia of The Malay’s Midwifery: A Treasury of Medical Science and Health Care) (Barakbah, 2007, p. 234), as follows:

“Mother will prepare the zamzam water and honey to be dropped into baby’s mouth using gold ring.

Table 3. Findings of the original sources recommending using honey in *tahnik*

Sources	Quotations	Origin of honey proposal
Respondent 1	“It might come from local community custom that looks at the sweetness as the main element of <i>tahnik</i> ... Therefore, some people substitute dates with honey.”	Local custom
Respondent 2	“The cause of the recommendation emerged in <i>tahnik</i> practice due to the nature of honey is equal to dates from the sweetness basis.”	Local custom
Respondent 3	“Sweetness similarity in dates and honey is the cause. People who have recommended honey in <i>tahnik</i> are not completely wrong because they consider the sweetness factor in both are equal.”	Local custom
Islamic manuscript literature	“Most preferred to use in <i>tahnik</i> is dry dates, if not found, then replaced with wet dates, if not found then with something sweet. Honey is the most preferred than others. Then if not found, replaced with something that has never been touched by fire”	al-Asqalani (2017. p.588)
Islamic manuscript literature	“The Prophet Muhammad took the baby and asked: Do you have something? I replied: Yes I have dates. So Rasulullah (p.b.u.h.) took the dates and softened it in his mouth.”	al-Kaurani (2008, p. 134)
Islamic manuscript literature	“The point of <i>tahnik</i> is to chew dates and sweep it on the baby’s palate, and honey is equivalent to dates.”	al-Muzhiri (2012, p. 492)

According to Malay beliefs (with the permission of Allah s.w.t), zamzam water can fluent the baby's tongue in reading the Quran and strengthen his belief in the religion. While honey is to sweeten his words to be liked by people."

Another discussion of mouth splitting is found in a book entitled *Bicara Tentang Adat dan Tradisi* (translation: A Talk of Custom and Tradition) (Mas, 1993, p. 62). It also mentions the use of honey as a main substance in the practice: 'After finished *azan dan iqamah*, then the boy's mouth will be split with sweets [honey, dates, or anything else].' In addition, the practice of mouth splitting using honey is also mentioned in Malay novels which is consistent with the practice of the Malay community. Among them, a novel titled *Mat Kilau* by Abdul Latip (2009, p. 20) explores the history of Mat Kilau's life from birth:

"A woman hand over a bowl of salt to Imam Rasu. For mouth splitting ceremonies, usually, a pinch of salt is put into the baby's mouth. The purpose is to make it the first taste he experienced after birth into the world. We have honey and zamzam water, so that is what we will daub on his mouth (Mat Kilau), said Imam Rasu. He believed in the benefits of honey and zamzam water. These are what should be given to a newborn baby."

Mouth splitting as Malay custom is not limited to dates and honey, as they have also used the combination of sweet (date, honey, and sugar), salty (salt), and sour (raisin and acidic) substances. This combination is used to give the baby a taste of things to come in his/her life; the baby will taste the sweetness, saltiness, and sourness of life (Rozninah, 2012). Thus, in a philosophical way, all these tastes will prepare the infant for challenging life experiences that he/she will face in the future.

3.3 When dates are not available, other sweet substances can be substituted

The practice of *tahnik* is generally done with dates. However, when dates cannot be found, the first and third respondents and Islamic literature reported that they can be replaced with other sweet substances. The second respondent does not suggest a replacement other than

zamzam water. Overall findings indicate that the use of dates is not a fixture in *tahnik* practice. In fact, it can be changed if/as needed due to lack of availability. These findings are shown in Table 4.

The approval can be viewed through the first and third respondents who suggest substituting the dates with sweet and unheated fruits because that is what the previous scholars had suggested. The second respondent allows using only zamzam water after dates because al-Ato' has narrated that zamzam was used by the Prophet (p.b.u.h.)—along with Ajwa dates, known to Muslims as 'the holy date'—when performing *tahnik* on his grandsons, al-Hassan and al-Hussain (al-Fakihi, 2018). The second expert also disagreed with substituting dates with anything other than zamzam water because from his point of view, *tahnik* is a worship practice that must be followed exactly as the Prophet (p.b.u.h.) has done. If dates are replaced with other ingredients, the meaning of *tahnik* will not be achieved, just as the Prophet's practice of breaking fast with dates cannot be replaced with something else.

3.4 What are suitable substitutes for dates in *tahnik*?

"Honey is the most preferred than the other. Then if not found, replaced with something that never been touched by fire" (Al-'Asqalani 2017, p. 588). Yes, honey is very akin to dates in terms of nature and privilege; both are sweet, and both are mentioned in the Quran (Holy Quran, al-Nahl, [11]:68-69)). However, from the standpoint of food group analysis, honey is a processed sweet produced by honeybees that decompose nectar into simple sugars in the honeycomb (Sammataro and Avitabile, 1998; Adriane et al., 2018).

By comparison, dates are naturally sweet and transformed into fruit without any external intervention. Therefore, the best substitutes for dates in *tahnik* practice should also come from this fruit group. Searching on the USDA Food Composition Databases (2021) has found fruits that have the same characteristics as dates in terms of sweetness and privilege, as well as the equation of nutrients and glucose that is closest to dates. These findings are shown in Table 5.

Table 4. Findings of using substitutes other than dates

Sources	Quotations	Can dates be substituted?
Respondent 1	"substituting the dates with sweet and unheated fruits"	Yes
Respondent 2	"using zamzam water after dates because al-Ato' has narrated that zamzam was used by the Prophet"	No, except for the zamzam water
Respondent 3	"dates can be substituted with other sweet and unheated fruits"	Yes
Islamic manuscript literature al-Asqalani (2017, p.588)	"Most preferred to use in <i>tahnik</i> is dry dates, if not found, then replaced with wet dates, if not found then with something sweet. Honey is the most preferred than others. Then if not found, replaced with something that has never been touched by fire."	Yes

Table 5. Dates and suitable replacements in *tahnik* practice

Type of Fruit	Amount of sugar per 100 g/g	Amount of calcium per 100 g/mg	Amount of potassium per 100 g/mg	Mentioned in the Quran
Dates	66.47	64	696	al-Nahl:11
Raisins	59.19	50	749	al-Baqarah: 266
Dried Figs	47.92	162	680	al-Tin: 1
Fresh Figs	16.26	35	232	al-Tin: 1
Pomegranates	13.67	10	236	Al-An'am: 99
Grapes	6.89	22	135	al-Baqarah: 266

Source: USDA Food Composition Databases (2021)

Table 5 shows that raisins are the most suitable replacement for dates in *tahnik* practice as they have the closest nutritional similarities—only differing by 10.9% in sugar, 16.6% in calcium, and 7.6% in potassium. Whereas from the standpoint of privilege, grapes (fresh fruit before dried into raisins) are often mentioned alongside dates in the Quran. There are seven places in the Quran that mention dates and grapes simultaneously: al-Baqarah ([2]:266), al-Ra'd ([13]:4), al-Nahl ([14]:11 and 67), al-Isra' ([17]:91), al-Mu'minun ([23]:19), and Yaasin ([36]:34). Therefore, when dates are not available, raisins are preferred first, then figs or pomegranates, followed by grapes, and then other sweet fruits.

4. Conclusion

The method of Sunnah in performing *tahnik* uses only dates. The recommendation of substituting dates with honey derives solely from some Islamic scholars. This view is based on their judgement (Ijtihad) and should not be attributed to the Sunnah of the Prophet (p.b.u.h.). When dates are not available, they can be substituted with raisins, figs, pomegranates, grapes, and/or other sweet fruits.

Conflict of interest

The authors declare no conflict of interest.

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