

THE *MISWĀK*, AN ASPECT OF DENTAL CARE IN ISLAM

by

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Gustav Nachtigal,¹ the famous nineteenth-century traveller and explorer of the Sahara and Sudan, relates that the women of Wadāi, a region in the Sudan, rarely go out without their toothbrushes in the corner of their mouths. These toothbrushes are, as he says, prepared from the wood of the *siwāk* (*Salvadora persica L.*), which has been made fibrous at the end, and as soon as they sit down they use these brushes diligently. Reporting in an article in 1915 the information of Dr Meyerhof, an ophthalmologist who had practised for many years in Cairo, Wiedemann² declares that the Nubians always carry with them a wooden stick of about 15 to 20 cm, called *siwāk*, to which they probably owe their shiny white teeth. Von Luschan,³ a privy councillor from Berlin, informed him that this kind of wooden stick could be found not only among the Nubians, but throughout Africa, even among the most southern Bantu tribes. He also told him that there still were, or had been until recently, thousands of caravan-carriers who took nothing else with them but a gourd for water and a “*msuaki*” (= *miswāk*). Even nowadays pious Muslims belonging to the religious movement called *Jamā‘at al-tablīgh*⁴ can often be seen wearing the *siwāk* in their breast pockets, which they use on every suitable occasion.

In this way, all these Muslims follow the example of their Prophet who according to the Ḥadīth,⁵ was a fervent supporter of its use. The *siwāk* was, according to him, a

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Some points in this article have also been discussed in Vardit Rispler-Chaim's ‘The *siwāk*: a medieval Islamic contribution to dental care’, *J. Royal Asiatic Soc.*, third series, vol. 2, Part I, April 1992, pp. 13–20.

¹ G. Nachtigal, *Sahara und Sudan*, 3 vols, Leipzig, 1889, repr. Graz, Akademische Verlagsanstalt, 1967, vol. 3, p. 261.

² Eilhard Wiedemann, ‘Zahnärztliches bei den Muslimen’, *Aufsätze zur arabischen Wissenschaftsgeschichte*, 1970, 2: 181–3, p. 181.

³ Eilhard Wiedemann, ‘Über Zahnpflege bei den muslimischen Völkern’, *Gesammelte Schriften zur Arabisch-Islamischen Wissenschaftsgeschichte*, 1984, 2: 873–8, p. 874. Wiedemann originally published this article in 1918. Von Luschan recommended him not to translate *miswāk* as “Zahnbürste” but as “Zahnpinsel”.

⁴ On this religious movement founded in India in the middle of the nineteenth century see Anwarul Haq, *The faith movement of Maulānā Muḥammad Ilyās*, London, Allen and Unwin, 1972. I thank my friend Yasien Mohammad for this information.

⁵ For a survey and source references see A. J. Wensinck, *A handbook of early Mohamman tradition alphabetically arranged*, Leiden, E. J. Brill, 1927, p. 230, s.v. toothbrush. *Idem.* an article on the *miswāk* in *The encyclopaedia of Islam*, new edition, Leiden and London, E. J. Brill, 1960 (hereafter *Encyclopaedia*), vol.

purgative for the mouth and a pleasure for Allāh. When the Prophet came into his house he first of all used the *siwāk*.⁶ When he woke during the night, he cleansed his mouth with it, then washed himself and prayed.⁷ And the only reason he did not declare its use obligatory for the community before every *ṣalāt* (ritual prayer) was that he feared to burden his followers.⁸ His servant ‘Abd Allāh b. Mas‘ūd was called *ṣāhib al-siwāk* since he was the one who took care of the Prophet’s *siwāk*.⁹ When the Prophet was on his deathbed he cleansed his mouth with the *siwāk*, after Aisha had chewed it so that it became smooth and soft.¹⁰ The extent to which the use of the *siwāk*, in the Muslim mind, is associated with the Prophet, may be illustrated by the fact that the tree from which the *siwāk* was prepared was called *siwāk al-Nabi*¹¹ or “*siwāk* of the Prophet” in Algeria. In spite of the Prophet’s example and the importance he attached to the use of the *siwāk*, Muslim law (*Fiqh*) did not make its use obligatory, but only desirable at all times.¹²

The kind of wood recommended for the preparation of the toothbrush called *siwāk* or *miswāk*¹³ is that of the *arāk*¹⁴ tree. Abū Ḥanīfa al-Dīnawarī, for instance, the ninth-century pharmacologist, states that this tree is best-known for the preparation

7, p. 187. It should be noted that these *ḥadīths* do not prove that the Prophet actually used the *miswāk*. It is perfectly possible that they merely try to give authenticity to a later practice by attributing it to the Prophet. For our purpose, however, it is important to realize that these *ḥadīths* are reflections of a practice current amongst the Muslims, and that these stories, once in vogue, probably strengthened the existing practice by using the Prophet as the model to be imitated. I thank Dr Lawrence Conrad for his valuable remarks on the interpretation of the different *ḥadīths* cited.

⁶ Muslim, *Ṭahāra*, trad. 43.

⁷ al-Bukhārī, *Adhān*, bāb 8.

⁸ al-Bukhārī, *Jum‘a*, bāb 8.

⁹ al-Bukhārī, *Faḍā‘il al-Ṣahāba*, bāb 20.

¹⁰ al-Bukhārī, *Maghāzī*, bāb 83.

¹¹ Wiedemann, op. cit, note 2 above, p. 182.

¹² See Wensinck’s article on the *miswāk*, op. cit, note 5 above, for a detailed discussion about the use of the *miswāk* according to Muslim law.

¹³ Neither term occurs in the Qur’ān, and in Ḥadīth only *siwāk* is used. In medical literature both occur. As the citation from Nachtigal shows, the term *siwāk* is used for the toothbrush as well as for the tree from which it is made, which is also called *arāk*; cf. R. Dozy, *Supplément aux dictionnaires Arabes*, 2nd ed., 2 vols, Leiden and Paris, Brill-Maisonneuve, 1927, vol. 1, p. 707, *siwāk*: “est l’arbre qui porte aussi le nom de *arāk*”; see also note 14 below. Moreover the term *siwāk* is used for the act of brushing the teeth as the citations from al-Majūsī will show; cf. Wensinck’s article on the *miswāk*, op. cit., note 5 above.

¹⁴ “Der *arāk*-Baum, eine Charakter-Pflanze der subtropischen Steppengebiete, ist *Salvadora persica* L., Zahnbürstenbaum oder (im NT!) Senfbaum, Salvadoraceae. Sein zähfaseriges Zweigholz ist pinselartig ausgefranst und als Zahnbürste (*siwāk*) verwendbar und geschätzt”, cf. Albert Dietrich (ed.), *Dioscurides triumphans. Ein anonym arabischer Kommentar (Ende 12. Jahrh. n. Chr.) zur Materia medica*, 5 books in 2 vols, Göttingen, Vandenhoeck & Ruprecht, 1988, bk 3, no. 16. For other properties ascribed to this tree see D. Denham, Capt. Clapperton and Dr Oudney, *Voyages et découvertes dans le Nord et dans les parties centrales de l’Afrique*, 3 vols, Paris, 1926, vol. 1, pp. 162–3: *souag*: “arbre de la tétandrie dont les baies rouges sont presque aussi bonnes que celles de la canneberge. La baie ou la drupe de cette arbre est très recherchée dans le Bornou et le Soudan, parce qu’on lui attribue la vertu de faire cesser la stérilité. Il est douceâtre et chaud au goût, à peu près comme le cresson de fontaine. En passant près de cette plante, on est toujours frappé d’une odeur forte et narcotique.” See also Manfred Ullmann, ‘Zum Verständnis der “Dichterischen Vergleiche der Andalus-Araber”’, *Welt des Orients*, 1977, 9: 108. In a scientific experiment carried out recently, English and Saudi researchers have shown that the wood of the *arāk* tree prevents plaque and inflammation of the gums. This wholesome effect can be explained, they suggest, by the occurrence of certain chemicals in it, such as fluoride, tannins, and a resinous substance (see M. J. Gazi et al., ‘The immediate- and medium-term effects of Meswak on the composition of mixed saliva’, *J. Clin. Periodontol.*, 1992, 19: 113–17).

of the *miswāk* from its roots, branches and *şuru*.¹⁵ Nachtigal¹⁶ informs us that this kind of wood has the quality of making the breath of the women of Wadāi sweet-smelling. Wiedemann¹⁷ states that the toothbrush used in Egypt is exclusively prepared from this wood. In addition to the *arāk* tree, al-Dīnawarī refers to other kinds of trees, the wood of which is good for the *miswāk*, namely, balsam of Mecca,¹⁸ *işhīl*,¹⁹ turpentine tree,²⁰ *nu'd*,²¹ *shathth*,²² *yasta'ūr*,²³ roots of *'arfaj*,²⁴ *dārim*,²⁵ fruitstalks (*'arājīn*) of the palm-tree, small or young palm-trees (*'alaj*), and leaves of the *ruḥāmā*.²⁶ Al-Washshā',²⁷ (d. 936) author of the *K. al-muwashshā'*, a handbook for good manners and etiquette (*Adab*), mentions, besides the *arāk* tree, sugar-cane,²⁸ roots of liquorice,²⁹ wood of *Prunus mahaleb L.*,³⁰ roots of lemon-grass,³¹ and the nodes of

¹⁵ Abū Ḥanīfa Aḥmad b. Dāwūd al-Dīnawarī, *K. al-nabāt* (Alif-Zay), ed. Bernhard Lewin, Wiesbaden, Franz Steiner Verlag, 1974, p. 225. For the term *şuru* cf. E. W. Lane, *An Arabic-English lexicon*, 8 vols, London, Williams and Morgate, 1863–1879, vol. 4, p. 1679, s.v. *şarī*: “A twig, or rod, drooping, or hanging down, to the ground, falling upon it, but with its base upon the tree, so that it remains falling in the shade, the sun not reaching it, and therefore becomes more soft, or supple, than the branch [from which it hangs], and more sweet in odour; and it is used for rubbing and cleaning the teeth.”

¹⁶ Nachtigal, op. cit., note 1 above, p. 261.

¹⁷ Wiedemann, op. cit., note 2 above, p. 181.

¹⁸ *bishām*, cf. A. Issa, *Dictionnaire des noms de plantes en latin, français, anglais et arabe*, Cairo, Imprimerie Nationale, 1930, p. 55. no. 7: “Commiphora opobalsamum; balm of Gilead; balsam of Mecca.”

¹⁹ *işhīl*, cf. al-Bīrūnī, *Book on pharmacy and materia medica*, edited with English translation by Hakim Mohammed Said, Karachi 1973, p. 25. no. 49: “It is a tree, the shoots of which are used as *miswāk*”; and p. 60. no. 141: “*Salvadora oleoides* Don. (family, Salvadoraceae)”.

²⁰ *dirw*, cf. Dietrich, op. cit., note 14 above, bk I, no. 34: “*Dirw* ist der arabische Name für *Pistacia lentiscus* [Moench], Mastixstrauch, Anacardiaceae. Sie ist die Stammpflanze für das zur Gruppe der Kauharze (*'ulūk*) gehörende Mastixharz, das früher zur Festigung des Zahnfleisches, gegen Magenbeschwerden u.a. Verwendung fand.”

²¹ *nu'd*, cf. A. de Biberstein Kazimirski, *Dictionnaire arabe-français contenant toutes les racines de la langue arabe*, nouvelle édition, 2 vols, Paris, G.-P. Maisonneuve, 1960, vol. 2, p. 1295: “Sorte d'arbre à épines fréquent dans le Hedjaz, dont l'écorce est employée pour tanner les cuirs, et du bois duquel on fait des cure-dents.” (derived from G. W. Freytag, *Lexicon Arabico-Latinum*, 4 vols, Halle 1830–37, vol. 4, p. 802).

²² *shathth*; cf. Freytag, op. cit., note 21 above, vol. 2, p. 393: “Nomen herbae odoratae et amarae, qua corium praeparatur.” See also E. W. Lane, op. cit., note 15 above, vol. 1, p. 1504.

²³ *yasta'ūr*, cf. de Biberstein Kazimirski, op. cit., note 21 above, vol. 2, p. 1627: “Sorte d'arbre dont on fait d'excellents cure-dents”.

²⁴ *'arfaj*, cf. Dozy, op. cit., note 13 above, vol. 2, p. 118: “branche-ursine ou acanthe”; Lane, op. cit., note 15 above, vol. 5, p. 2017.

²⁵ *dārim*, Freytag, op. cit., note 21 above, vol. 1, p. 26: “Nomen arboris ei, quae *ghaḍā* appellatur, similis”.

²⁶ al-Dīnawarī, op. cit., note 15 above, pp. 225–30. For *ruḥāmā* see Issa, op. cit., note 18 above, p. 56, no. 17: “*Convolvulus lanatus* (Convolvulaceae)”.

²⁷ Abū Ṭayyib Muḥammad b. Işhāq b. Yahyā al-Washshā', *K. al-Muwashshā'*, ed. R. E. Brünnow, Leiden, E. J. Brill, 1886, p. 141; transl. D. Bellmann, *Das Buch des buntbestickten Kleides*, 3 vols. Leipzig and Weimar, Gustav Kiepenheuer Verlag, 1984, vol. 2, p. 101. On the author see vol. 3 of Bellmann's translation, pp. 5–21.

²⁸ *al-sukkar*, is here *qaşab al-sukkar* or sugar cane. The term *sukkar* refers to many different forms of sugar; cf. Dietrich, op. cit., note 14 above, bk. 2. no. 65 and *Encyclopaedia*, op. cit., note 5 above, vol. 4, pp. 682–4, s.v. *qaşab al-sukkar* (article by M. Canard and P. Berthier).

²⁹ *sūs*, cf. Dietrich, op. cit., note 14 above, bk. 3, no. 5: “*Glycyrrhiza glabra L.* und Var., Süssholz, Leguminosae.”

³⁰ *maḥlab*, cf. Dietrich, op. cit., note 14 above, bk. 1, no. 65, n. 4: “*Prunus mahaleb seu Cerasus L.* und Var., Felsenkirsche, Weichselkirsche, Steinweichsel, Rosaceae.”

³¹ *idhkkhir*, Dietrich, op. cit., note 14 above, bk. 1, no. 14: “Die Pflanze ist das *Cymbopogon schoenanthus* [L.] Sprengel, Bartgras, früher auch Kamelheu, *Juncus odoratus* genannt, Gramineae.”

pyrethrum.³² Al-Washshā³³ also remarks that the more often one uses these materials the more perfect one's manners are considered to be. Ibn al-Jazzār³⁴ (tenth century) recommends palm-branches (*sa'af*) and *arāk*. Ibn Sīnā³⁵ (980–1037) and al-Majūsī³⁶ (tenth century) remark that the best kind of wood for a *siwāk* is that which has astringency (*qabḍ*) and bitterness (*marāra*). Ibn Buṭlān³⁷ (eleventh century) recommends the fruit-stalks of the palm-tree, imported from Mecca.³⁸ The wood is made fit for this purpose by chewing its end so that it becomes smooth and fibrous. Its size varies from 4 cm to 20 cm, and its diameter from 1 to 1.5 cm, from what I have seen personally. According to Wiedemann³⁹ its length varies from 15 to 20 cm. The *miswāk* is not only prepared from the branches or roots of the *arāk* tree, but also from its bark.⁴⁰

The use of the *siwāk*, however, was not introduced under Islam. It is an old pre-Islamic custom, which was adhered to by the ancient Arabs to get their teeth white and shiny. For white shiny teeth were a symbol of beauty and attractiveness. The white teeth of the beloved are often compared with a string of pearls in ancient pre-Islamic Arabic poetry.⁴¹ Another possible reason for its observance is its contribution to ritual purity.⁴² This custom was then, according to the Ḥadīth, adopted and Islamized by the Prophet.

In the early Islamic period proper use of the *siwāk* became part of a cultivated and elegant mode of life. Al-Washshā' remarks:

Know that it belongs to the etiquette of fine, respectable, well-educated, pious, and proud people to use the *siwāk* for cleaning the teeth. For this is, according to them, the most noble cleanliness, the best ritual purity and the most perfect respectability. This is

³² 'āqirqarhā, cf. Dietrich, op. cit., note 14 above, bk. 3, no. 69: "Anacyclus pyrethrum [L.] Link, Römischer Bertram, Speichelwurz, Compositae", al-Kindī employs it in a prescription for dentifrices; cf. Martin Levey, *The medical formulary or Aqrābādīn of al-Kindī. Translated with a study of its materia medica*, Madison, Milwaukee, and London, University of Wisconsin Press, 1966, p. 301, no. 191.

³³ al-Washshā', op. cit., note 27 above, vol. 2, p. 101.

³⁴ See quotation on p. 77 below.

³⁵ On the author see Manfred Ullmann, *Die Medizin im Islam*, Leiden and Cologne, E. J. Brill, 1970, pp. 152–6; the quotation is from *K. al-Qānūn fī al-ṭibb*, 5 books in 3 vols, repr. Beirut, n.d., *Kitāb III, Fann 7*, (p.184).

³⁶ See citation from his *K. al-malakī* on p. 78 below.

³⁷ Cf. Ullman, op. cit., note 35 above, pp. 157–8; Ibn Buṭlān, *Le Taqwīm al-ṣiḥḥa (Tacuini Sanitatis) d'Ibn Buṭlān: un traité médical du XIe siècle*, ed. Hosam Elkhadem, Louvain, Peeters, 1990, pp. 9–13.

³⁸ *Taqwīm al-ṣiḥḥa*, pp. 106–7, 215.

³⁹ Op. cit., note 2 above, p. 182.

⁴⁰ Cf. Helga Venzlaff, *Der Marokkanische Drogenhändler und seine Ware*, Wiesbaden, Franz Steiner Verlag, 1977, pp. 96–7. She remarks that in Morocco strips of 20 cm long and 1 cm wide which have been rolled up, are sold in the market, and that pieces of about 3 cm long are broken off and their ends chewed.

⁴¹ See Charles James Lyall (ed.), *The Mufaḍḍaliyyāt. An anthology of ancient Arabian odes compiled by al-Mufaḍḍal son of Muhammad*, Oxford, Clarendon Press, 1921, p. 382, no. 40; cf. Otto Spies, 'Beiträge zur Geschichte der arabischen Zahnheilkunde', *Sudhoffs Archiv*, 1962, 46: 153–77, pp. 174–5. This article contains important material on Arabic dentistry.

⁴² Cf. Abū Ja'far Muḥammad ibn Jarīr al-Ṭabarī, *Ta'riḫ al-rusul wa-al-mulūk* [Annales], ed. M. J. de Goeje et al., 3 series, Leiden, E. J. Brill, 1879–1901, series 1, p. 311, 11. 16–20: "Ibn Bashshār told us on the authority of Sulaymān b. Ḥarb who told us on the authority of Abū Hilāl who told us on the authority of Qatāda about Allāh's saying 'When Ibrāhīm was tried by his Lord with certain words' (Qur'ān, Sura 2: 124);

the aim of fine and noble people. The *siwāk* has recognized qualities. Moreover it belongs to the Sunna [custom] of the Prophet.⁴³

He also formulates certain rules for its proper use:

For the cleaning of the teeth with the *miswāk* definite times [of the day] and places have been prescribed. One should not use it at improper times nor should one go beyond the times fixed for it. One may use it in the morning and evening, during the afternoon, before daybreak and after prayer. It is also permitted to use the *miswāk* on an empty stomach, before going to sleep and during the daytime when fasting. Fine, well-educated people are not allowed to use the *siwāk* in certain places as, for instance, in the toilet, in the bath, in the middle of the street, and among many people. None of them cleans his teeth when standing, reclining upon his side, or lying down. Neither does he clean them when everyone is looking at him, or when he is speaking. To use the *siwāk* on the toilet and in the bath belongs to the bad habits of the low and common people, for such an abuse weakens the gums and worsens the breath of the mouth. Well-educated, respectable and fine people never behave in that way.⁴⁴

I have quoted this text in its entirety because it not only informs us about the correct way fine and well-educated people (*al-zurafā' wa-al-udabā'*) should use the *siwāk*, but also contains unique information about the extravagant use the low and common people (*al-sifla wa-al-'awāmm*) made of it in those days. They used it all the time, in all positions and circumstances. They used it even when they were in the toilet, talking to someone, taking a bath, in the middle of the street, or even when at the centre of everyone's attention. Neither did they care very much if their *siwāk* was completely used up, nor did they protect it from dirt and dust as may be clear from al-Washshā's following statement:

It is a custom of well-educated people not to use the *miswāk* too long so that the end is worn out. This is, according to them, a despicable habit [of the low, common people]. On the contrary, they prepare for their *miswāks* wrappers of raw silk or bindings of floss silk to save them from defilement and to protect them from dust and dirt.⁴⁵

Classical Arab poetry also reflects the use of the *siwāk*, where it figures as a symbol for the fragrant mouth, the white teeth, the love and beauty of the beloved.⁴⁶ One of the most subtle seems to me the one by Bashshār b. al-Burd (eighth century):

that the latter verse means that He tried him with circumcision, the shaving of the pubes, the washing of the anterior and posterior parts, the *siwāk*, the shaving of the mustache, the cutting of the nails, and the plucking of the hair of the armpit." Though it is quite probable that the ancient Arabs also used the *miswāk* for the sake of ritual purity which was so important to them (see J. Wellhausen, *Reste arabischen Heidentums*, 3rd ed. Berlin, Walter de Gruyter & Co., 1961, p. 172), it is impossible to prove this from the *ḥadīth* cited. For it merely authorizes, as Dr Lawrence Conrad rightly pointed out to me, an Islamic custom by attributing it to the great pre-Islamic figure of Ibrāhīm.

⁴³ al-Washshā', op. cit., note 27 above, Brünnow edition, pp. 140–1; Bellmann translation, vol. 2, p. 100.

⁴⁴ al-Washshā', op. cit., note 27 above, Brünnow edition, pp. 141–2; Bellmann translation, vol. 2, pp. 101–2.

⁴⁵ al-Washshā', op. cit., note 27 above, Brünnow edition, p. 142; Bellmann translation, vol. 2, p. 102.

⁴⁶ For an extensive list of quotations from Islamic poetry see al-Washshā', op. cit., note 27 above, Brünnow edition, pp. 102–5; Bellmann translation, vol. 2, pp. 103–9; see also H. Pérès, *La poésie andalouse en*

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She cleaned her teeth for me with a *miswāk* and by this wanted to tell me how pleasant the taste of her mouth was, how she wanted to improve herself. And really! When the *miswāk* brought to me the spittle of her mouth, cold as ice, like pure water over my hand, then I kissed that which had caressed her mouth and called to it: O would that I could be the *miswāk* which, my mistress, was so close to you!⁴⁷

It is interesting to observe that this kind of toothbrush was not used by the Arabs alone, but other people used something akin to it. The Japanese, for example, called it *koyoji*,⁴⁸ while the Romans used mastic⁴⁹ to rub their teeth and as a toothpick.⁵⁰ Rabbinic literature⁵¹ mentions more than once a kind of wooden stick called in Hebrew *qesam*⁵² and in Aramaic *qisā*,⁵³ which the Jews used for cleaning the teeth. Though this term is usually translated as toothpick, Preuss⁵⁴ supposes that it is more probably a kind of toothbrush. Though Preuss may be right that sometimes the *qesam* was used in this way, it should be noted that the same term is also used for the small wooden stick with which young girls used to keep the holes in their ears open.⁵⁵ It is easier to imagine that the size of this stick was that of a toothpick, rather than that of a toothbrush. Moreover, the terminology employed in one source⁵⁶ refers clearly to the

arabe classique au XIe siècle. 2nd rev. ed, Paris, Adrien-Maisonneuve, 1953, p. 311, for two quotations from Andalusian poets.

⁴⁷ al-Washshā', op. cit., note 27 above, Brünnow edition, pp. 142–3; Bellmann translation, vol. 2, pp. 103–4.

⁴⁸ Wiedemann, op. cit., note 3 above, p. 875.

⁴⁹ Mastic, cf. Dioscurides, *De materia medica libri quinque*, ed. Max Wellmann, repr. Berlin, Weidmannsche Verlagsbuchhandlung, 1958, bk 1, no. 70; translation J. Berendes, repr. Wiesbaden, Dr Martin Sändig, 1970, bk 1, vol. 90, *schinos*: "Die mastixpistazie . . . Sie befestigt auch als Mundspülwasser lose Zähne. Die grünen Holzsplitter, mit welchen statt Zahnstochern die Zähne gerieben werden, machen diese glatt"; cf. note 20 above and *Paulys Real-Encyclopädie der classischen Altertumswissenschaft*, Neue Bearbeitung unter Mitwirkung zahlreicher Fachgenossen herausgegeben von Georg Wissowa, Stuttgart, 1893, vol. 14, 1930, pp. 2167–75, s.v. "mastix".

⁵⁰ Cf. Martialis, *Epigrammata*, ed. by E. M. Lindsay, 3 vols, Oxford, 1929, vol. 3, p. 82: "stat exoletus suggestitque ructanti pinnas rubentes cuspidisque lentisci"; "There stands a catamite by him and offers his belching throat red feathers, and slips of mastic" (translation by Walter C. A. Ker). See also, C. Daremberg and E. Saglio, *Dictionnaire des antiquités grecques et romaines d'après les textes et les monuments*, 5 parts in 10 vols, Paris, Librairie Hachette, 1877–1919, s.v. "denticulapium".

⁵¹ See Mishnah Beza IV, 6; Tos. Shabbat V, 1; T. Jer. Demai 23b.

⁵² See Alexander Kohut, *Sefer Arukh ha-Shalem. Targumic, talmudic and midrashic dictionary of Nathan ben Jehiel*, 8 vols, Vienna, 1878–1892, vol. 7, p. 147: "abgehauenes Stück Holz"; Dioscurides, op. cit., note 49 above, bk 1, no. 70; translation Berendes, bk 1, no. 90; Eliezer Ben Yehuda, *Millon ha-Lashon ha-Ivrit*, Berlin and Tel Aviv, 1910–1959, 17 vols, vol. 12, pp. 6043–4: "chip of wood".

⁵³ See Jacob Levy, *Wörterbuch über die Talmudim und Midraschim*, 4 vols., Berlin and Vienna, Verlag Benjamin Harz, 1924, vol. 4, p. 298: "Span, Splitter, Stück Holz"; Michael Sokoloff, *A dictionary of Jewish Palestinian Aramaic of the Byzantine period*, Ramat-Gan, Bar Ilan University Press, 1990, p. 491: "Tree, pole, wood, chip".

⁵⁴ Julius Preuss, *Biblisches-talmudische Medizin. Beiträge zur Geschichte der Heilkunde und der Kultur überhaupt*, repr. with Introduction by S. Muntner; register of Hebrew and Aramaic terms by A. Lowinger, transl. and ed. by S. Paley, New York, Ktav, 1971, p. 331: "Öfters erwähnt wird der qesem, der Span, schwerlich als Zahnstocher, wahrscheinlich in einer für uns wenig ästhetischen Weise zerbissen als Zahnbürste, wie es von Muhammed sein Biograph Ibn Hisham berichtet;" cf. register p. lxxvii, s.v. *qesam*: "Splinter, chip = toothpick, brush?"

⁵⁵ Cf. Mishnah Shabbat VI, 6.

⁵⁶ Talm. Jer. Demai 23b: "Ayti li had qis nahze shinnay"; which means: "Bring me a chip so that I can pick my teeth."

use of something sharp which one sticks between the teeth. Preuss⁵⁷ also refers to a tradition stating that the *qeṣam* was carried continuously between the teeth. Another indication that the Jews may have known and used something like the *siwāk* is the explanation given by Cherbonneau, professor of Arabic in Constantinople, for the term *siwāk*: “écorce du noyer, avec laquelle les Mauresques et les Juives se frottent les dents et se brunissent les lèvres”.⁵⁸ It is perfectly possible that Cherbonneau learned about this custom from the Jews of Constantinople. One of these, Moses Hamon, a sixteenth-century court physician of Sulaymān the Magnificent, was the author of a compendium on dentistry.⁵⁹ Although he refers to the *miswāk*,⁶⁰ there are two reasons which make it impossible to conclude that it was used by his compatriots. First because his work is based on Arabic medical literature, and second because he was practising at the Ottoman court. Piamenta,⁶¹ referring to the Jews of Yemen, states in his explanation of the term *miswāk* that they did not use this utensil.

As well as the *siwāk* or toothbrush, the Arabs also used the toothpick, which was called *khilāl*. Wiedemann⁶² refers to information which he got from Dr Schweinfurth, the great traveller and expert on the flora of Egypt, according to which the plant regularly used for a toothpick was *nānakhwāh*⁶³ (*Ammi visnaga L.*, Bishops' weed), which was called by the Egyptians *khalla* (cf. *khilāl* for toothpick). This plant was sold in stands in front of mosques to enable Muslims to clean their teeth before prayer.⁶⁴

From the foregoing it is clear that the use of the *siwāk*, a pre-Islamic custom, was very common among Arabs throughout history. In the early Islamic period the common people used it so often and in such an ostentatious, unaesthetic and unhygienic way that rules were fixed for the cultured and well-mannered prescribing how, when and where to use it, and, even more important, when and where not.

An important question concerning the use of the *siwāk* and the *khilāl*, especially when used so often and sometimes in such an unhygienic way, is how they affected the different parts of the mouth such as teeth, gums and palate from a medical rather than an aesthetic point of view.⁶⁵ Al-Washshā' remarks:

⁵⁷ Preuss's reading of this tradition recorded in Tos. Shabbat V, 1, follows that of M. S. Zuckermann's edition (*Tosefta*, repr. Jerusalem, Wahrman, 1970), which is the same as that of the first edition and of the Erfurt and London MSS. Their version is: “Yoze adam be-qeṣam she-be-shinnav (we) she-be-sandalo”, which means: “One may go out (on Shabbat) with a chip of wood between the teeth (and) in one's shoes.” This reading was adopted in later halakhic literature as well. The original version, however, was, as pointed out by Saul Lieberman (*Tosefta ki-fshutah*, New York, 1962): “Yoze adam be-qeṣam she-be-shenez sandalo”, which means: “one may go out (on Shabbat) with a chip of wood between one's shoelaces.”

⁵⁸ M. A. Cherbonneau, ‘Définition lexicographique de plusieurs mots usités dans le langage de l’Afrique septentrionale’, *Journal Asiatique*, 1849, 13: 64–70, p. 67.

⁵⁹ See Arslan Terzioğlu (ed.), *Moses Hamons Compendium der Zahnheilkunde*, Munich, 1977.

⁶⁰ *Ibid.*, fol. 52a; cf. Introduction, p. xxviii.

⁶¹ Moshe Piamenta, *Dictionary of post-classical Yemeni Arabic*, 2 vols, Leiden, E. J. Brill, 1990, vol. 1, p. 239.

⁶² Wiedemann, op. cit., note 2 above, p. 182.

⁶³ See Dietrich, op. cit., note 14 above, bk 3, no. 59; Issa, op. cit., note 18 above, p. 13, no. 2, translates it as pick-tooth.

⁶⁴ Wiedemann, op. cit., note 3 above, p. 875.

⁶⁵ It is a pity that the editors of such a prestigious project as *The encyclopaedia of Islam* decided to reprint for the entry on the *miswāk* Wensinck's article from the former *Enzyklopaedie des Islams* which deals with it only from the points of view of *ḥadīth* and *fiqh* while omitting the medical aspect.

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The approaching death did not stop the Prophet—may Allah bless and save him—from requesting a *siwāk*, for this is verily the most noble object which one can use and approve of. For it whitens the teeth, purifies the mind, is good for the foul breath of the mouth, extinguishes [the fire of] the bile, dries the phlegm,⁶⁶ strengthens the gums, strengthens the flesh between the teeth,⁶⁷ makes the sight clear and sharp, puts an end to constipation and stimulates the appetite.⁶⁸

But at the same time we saw that even al-Washshā had to admit that under certain conditions it can have a detrimental effect on the different parts of the mouth. A more convincing source of information is the clinical experience of those physicians⁶⁹ who witnessed the harmful effects of the *siwāk* on the oral health of their patients. It is worth considering their opinion.

Ḥunayn b. Iṣḥāq⁷⁰ (809–873) wrote a work on dentistry, namely, *K. ḥifẓ al-asnān wa-al-litha* (On the Preservation of the Teeth and Gums)⁷¹ which is still in manuscript. Fragments, however, are cited by al-Rāzī⁷² (865–925) in his medical compendium *K. al-ḥawī* (Liber Continens).⁷³ Quoting Ḥunayn he remarks:

and if someone wants his teeth and gums to stay healthy . . . he should beware of pieces of food left between the teeth, he should clean his teeth painstakingly without unsettling them and without wounding the gums. For an excessive use of the toothpick (*idmān al-khilāl*) and playing with it wounds the gums; therefore if a person avoids this, his teeth and gums will remain healthy.⁷⁴

In another statement he declares: “One should not persist in [rubbing] the teeth with the toothbrush (*wa-yanbaghī an lā yulajja ‘alā al-asnān bi-l-siwāk*), for this takes away their smoothness, makes them rough and thereby causes them to become rotten⁷⁵ (*ḥafr*) and filthy.” To this he adds: “The toothbrush (*siwāk*) and also warm toothpowders (*sanūnāt*) cause injuries to the soft edge of the gums connected with the

⁶⁶ Didactic literature also recommends the use of the *miswāk* because of this quality. For by drying the superfluous phlegm in the brain which is the major cause of forgetfulness, it strengthens the student’s memory; cf. al-Zarnūjī, *K. Ta’līm al-muta’allim li ta’allum tariq al-’ilm*, Kasan, 1898, (comp. 1203), p. 113.

⁶⁷ The Arabic text reads: “yuqawwī al-’umūr”; cf. Lane, op. cit., note 15 above, vol. 5, pp. 2154–5; ‘amr: “The flesh that is between the teeth.”

⁶⁸ al-Washshā, op. cit., note 27 above, Brünnow edition, p. 141; Bellmann translation, vol. 2, p. 101.

⁶⁹ The Arabs did not have specialists for dental diseases. Their treatment and cure was part of a physician’s work; cf. Ullmann, op. cit., note 35 above, p. 215. Ullmann also gives a survey of Arabic sources which discuss dental diseases (pp. 215–16). For many sources in translation see S. Elias Khalifah and I. Sami Haddad, ‘Dental gleanings from Arabian medicine’, *J. Am. dent. Assoc.*, 1937, 24: 944–55, and ‘Arabian description of dental caries in the tenth century’, *ibid.*, pp. 1847–1952, as well as Spies, op. cit., note 41 above.

⁷⁰ See Ullmann, op. cit., note 35 above, pp. 115–19; Fuat Sezgin, *Geschichte des arabischen Schrifttums*, vol. 3, *Medizin-Pharmazie-Zoologie-Tierheilkunde bis ca. 430 H.*, Leiden, E. J. Brill, 1970, pp. 247–56.

⁷¹ See Ullmann, op. cit., note 35 above, p. 118; Sezgin, op. cit., note 70 above, vol. 2, p. 117, no. 10 gives as the title: *Qaul fi ḥifẓ al-asnān wa-stiṣlāḥihā*.

⁷² See Ullmann, op. cit., note 35 above, pp. 128–36; Sezgin, op. cit., note 70 above, pp. 274–94.

⁷³ *K. al-ḥawī*, 23 vols, Hyderabad and Deccan, Osmania Oriental Publications Bureau, 1952–1974.

⁷⁴ Op. cit., note 73 above, vol. 3, pp. 107–8.

⁷⁵ *ḥafr*, cf. Lane, op. cit., note 15 above, vol. 2, p. 600: “A scaling in the roots of the teeth or a rottenness . . . or an erosion of the roots of the teeth by a yellow incrustation between those parts and the gum . . . or a cankering of the teeth or a yellowness upon the teeth.”

teeth. This happens because the sticky natural moisture contained in the edges of the gums which helps the gums to stick to the teeth is annihilated by [the persistent use of toothbrush] and warm toothpowders.”⁷⁶ It is clear that in his medical practice Ḥunayn often treated patients who suffered from diseases of the teeth caused by an excessive use of toothbrush and toothpick. While recognizing their wholesome effect when used moderately, Ḥunayn warns emphatically against their excessive use. It is very probable that these patients belong to the same section of the population as those mentioned by al-Washshā, namely, the common people.

‘Īsā b. Māsawayh,⁷⁷ also quoted by al-Rāzī, remarks: “The toothbrush (*siwāk*) dries the tongue and is good for the foul breath of the mouth; it purifies the brain, refines the senses, polishes the teeth, and strengthens the gums. Everyone should take that kind of toothbrush that suits him”.⁷⁸ As a remedy for those suffering from weak gums he advises dipping the toothbrush in extract of roses⁷⁹ and rubbing the teeth with red sandalwood⁸⁰ and cubeb pepper,⁸¹ of each one part; half a part of the ashes of reed,⁸² half a part of “seafoam”,⁸³ pyrethrum and mountain raisins,⁸⁴ of each one sixth of a part; and one third of a part of fragrant aloewood.⁸⁵

The close similarity between his praise of the *siwāk* and that of al-Washshā’ is remarkable as the following table shows:

⁷⁶ Op. cit., note 73 above, vol. 3, p. 113.

⁷⁷ It is reasonable to assume that this name is a mistake of the Hyderabad printed text of the *K. al-hāwī* for the well-known physician Yuḥannā ibn Māsawayh (777–857), who, according to Ibn Abī Uṣaybi’a (*‘Uyūn al-anbā’*, 255), composed a treatise on the *siwāk* called *K. fī al-siwāk wa-al-sanūnāt*.

⁷⁸ Op. cit., note 73 above, vol. 3, p. 150.

⁷⁹ *mā’ al-ward*, cf. Dietrich, op. cit., note 14 above, bk 1, no. 68.

⁸⁰ *ṣandal aḥmar*, cf. Werner Schmucker, ‘Die pflanzliche und mineralische Materia medica im Firdaus al-ḥikma des ‘Alī ibn Sahl Rabban aṭ-Ṭabarī’, Bonn, 1969, pp. 282–3, no. 461: “Das rote (Sandalholz) von: *Santalum album* L. (Santalaceae).”

⁸¹ *kabāba*: cf. *Wörterbuch der klassischen arabischen Sprache*, Wiesbaden, Otto Harrassowitz, 1970 ff, vol. 1, p. 16: “Fruit of *Piper Cubeba* L.”; al-Kindī has cubeb in a drug for gum and mouth pustules, drugs for a sore throat, a Jewish tooth medicine, and a tooth powder that polishes the teeth, removes decay, and protects the mouth (Levey, op. cit., note 32 above, p. 321, no. 249).

⁸² *qaṣab*, cf. Dietrich, op. cit., note 14 above, bk 1, no. 54: “Qaṣab ist eine allgemeine Bezeichnung für zahlreiche, meist hochschäftige Pflanzen.”

⁸³ *zabad al-baḥr*, cf. Dietrich, op. cit., note 14 above, bk. 1, no. 9, n. 3: “aus Schwämmen, Algen u.a. Substanzen bestehende Restprodukte, die vom Meer ausgeworfen worden (ἀλκυόνιον bei DG V 118 oder ᾠδάρκης V 119);” J. M. Riddle, *Dioscurides on pharmacy and medicine*, Austin, University of Texas Press, 1985, p. 158: ἀλκυόνια: “various species of zoophytes, ᾠδάρκης: a slaty efflorescence on the herbage of marshes (probably calcium chloride and other salts);” Levey, op. cit., note 32 above, p. 272, no. 118: “Cuttle fish bone, jellyfish, and others. The Ar. name may refer to many different things. Later, it seems to have settled into the meanings given above”; al-Kindī employs it in a prescription for arresting the deterioration of the gums and in other dentifrices.

⁸⁴ *maywīzaj*, cf. Dietrich, op. cit., note 14 above, bk 4, no. 141: “Diese Wilden oder Bergrozinen sind die schwarzen Samenkörner von *Delphinium staphisagria* L., Srephans- oder Läusekörner, Samen des Scharfen Rittersporn, *Ranunculaceae*.”

⁸⁵ *ūd*, cf. Dietrich op. cit., note 14 above, bk 1, no. 19: “Das Wort ‘ūd ‘Holz’, dann ‘Aloeholz’, steht, wie in diesem Kapitel fast durchweg entsprechend seiner Herkunft für ‘ūd hindī, die indische Aloe. Es handelt sich wahrscheinlich um *Aquilaria agallocha* Roxberg (*Aloëxylon agallochum* Lour.), Aloë-Holz, *Thymelaeaceae*”; al-Kindī has aloewood in a prescription to remove the decayed part of teeth, to treat bad breath, to polish the teeth, and to protect the mouth (Levey, op. cit., note 32 above, pp. 307–8, no. 210).

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‘Īsā b. Māsawayh

- 1) dries the tongue
- 2) is good for the foul breath of the mouth
- 3) purifies the mind
- 4) refines the senses
- 5) polishes the teeth
- 6) makes the gums strong

al-Washshā’

- dries the phlegm
- is good for the foul breath of the mouth
- purifies the mind
- makes the sight clear and sharp
- whitens the teeth
- strengthens the gums
- extinguishes [the fire] of the bile
- puts an end to constipation
- stimulates the appetite

This kind of recommendation which does not refer to the negative aspects of the use of the *siwāk*, and which is probably derived by one author from the other, is obviously a kind of more general statement also used by non-physicians.⁸⁶

Ibn al-Jazzār,⁸⁷ author of the influential medical compendium *Zād al-musāfir* (Viaticum), remarks as part of a treatment of someone suffering from a bad smell of the mouth (*bakhr*) that he should brush his teeth continuously with toothbrushes (*wa-yuwāzib ‘alā al-siwāk bi-l-masāwīk*)⁸⁸ prepared from palm-branches⁸⁹ and from the *arāk* tree.⁹⁰ Ibn al-Jazzār mentions the *miswāk* and recommends its frequent use only in this specific case. We therefore do not know if he would recommend or reject such a frequent use for the general preservation of the health of one’s teeth.

Ibn Sīnā⁹¹ states in a chapter on the preservation of the health of the teeth that if someone wants his teeth to remain intact he should observe eight things:

- 1) He should not take too often certain kinds of food and drink which corrupt quickly in the stomach, such as milk, salt fish, *ṣaḥnā*.⁹²
- 2) He should not vomit continuously.
- 3) He should avoid chewing that which is tough and hard to chew (*‘alik*).
- 4) He should avoid breaking [with his teeth] hard (*ṣulb*) things.
- 5) He should avoid that which sets his teeth on edge (*muḍarrisāt*).
- 6) He should avoid everything which is very cold, especially after something warm, and something which is very warm, especially after something cold.
- 7) He should persist in cleaning his teeth with a toothpick, but not in an extreme and

⁸⁶ “The *siwāk* takes away rottenness (*ḥafr*) (of the teeth) and strengthens the gum”, cf. Diyā’ al-Dīn ‘Abd Allāh b. Aḥmad ibn al-Bayṭār, *K. al-Jāmi’ li mufradāt al-adwiya wa-al-aghdiya*, 4 parts in 2 vols, repr. Beirut, n.d., vol. 1, p. 140.

⁸⁷ Cf. Ullmann, op. cit., note 35 above, pp. 147–9; Sezgin, op. cit., note 70 above, pp. 304–7.

⁸⁸ MS Berlin 252, fol. 13b reads: “wa-yuwāzib ‘alā al-tasāwuk bi-l-siwāk”; MS Oxford 302, fol. 18a reads: “wa-yuwāzib ‘alā al-tasāwuk bi-masāwīk”.

⁸⁹ *sa’af*, Lane, op. cit., note 15 above, vol. 4, p. 1365: “palm-branches”.

⁹⁰ *Zād al-musāfir*, bk 2, ch. 23, MS Dresden 209, fol. 67a.

⁹¹ ‘Alī ibn Sīnā, op. cit., note 35 above, *Kitāb 3, Fann 7*, p. 184.

⁹² Lane, op. cit., note 15 above, vol. 4, p. 1656: “A certain condiment, or seasoning, made of fish, of small fish, which has the property of exciting appetite, and rectifying the state of the stomach”.

immoderate way (*min ghayr istiḡā' wa-ta'addin*) which might cause injuries to the gums and the flesh between the teeth and remove it from there or move the teeth. 8) He should avoid those things which are especially harmful for his teeth, such as leeks,⁹³ which are very harmful for the teeth and the gums, and the other drugs which I have mentioned in the chapter on the simple drugs.

Concerning the use of the toothpick, Ibn Sīnā makes the same reservation as Hunayn, namely, that one should use it in a moderate way. About the toothbrush he then remarks:

The toothbrush should be used in a moderate way (*bi-l-i'tidāl*), one should not use it to excess because this takes away the whiteness and moisture of the teeth and makes them disposed to receive the defluations and vapours which arise from the stomach and which then cause a fissure. But when one uses the toothbrush in a moderate way one gets white and strong teeth and strong gums, one prevents rotten teeth (*ḡafr*), and it is good for foul breath.⁹⁴

It is clear that in the case of the toothbrush Ibn Sīnā had the same kind of experience as Hunayn; he therefore, like him, warns against its excessive use.

Al-Majūsī,⁹⁵ author of the famous *K. kāmil al-ḡinā'a al-ṡibbiya* which is also called *al-Kitāb al-malakī*, states in a chapter entitled "On the regimen of the bodies the members of which suffer from harm caused by a bad temperament":

If someone's teeth are set on edge (*ḡaras*) he should take purslane⁹⁶ and coarse salt;⁹⁷ but he should be careful not to take ice-cold water after a warm meal, and he should guard himself against the occurrence of rotten teeth (*ḡafr*) by brushing his teeth in a moderate way without exaggerating (*bi-l-siwāk al-mu'tadil min ghayr ifrāt*) with sweet things such as burned barley flour,⁹⁸ burned wormwood,⁹⁹ "seafoam" . . . One of the things which strengthens the teeth and the gums and is good for bad breath is to use a toothbrush (*siwāk*) from wood containing bitterness and astringency with sweet

⁹³ *kurrāth*, "leek (*Allium porrum* L.)", cf. *Wörterbuch*, op. cit., note 81 above, vol. 1, pp. 119–20.

⁹⁴ Op. cit., note 35 above, *Kitāb 3, Fann 7*, p. 184.

⁹⁵ Cf. Ullmann, op. cit., note 35 above, pp. 140–6.

⁹⁶ *al-baqla al-ḡamqā'*, cf. Dietrich, op. cit., note 14 above, bk 2, no. 106: "Portulaca oleracea L., Portulak, Burzelkraut, Portulacaceae"; Levey, op. cit., note 32 above, pp. 244–5, no. 41: "The seeds [of purslane] are used for a mouthwash."

⁹⁷ *al-milḡ al-jarīsh*, cf. Lane, op. cit., note 15 above, vol. 2, p. 410, *jarīsh*: "applied to salt it signifies *mā lam yuṡayyab* [app. meaning such as has not been purified]".

⁹⁸ *daḡīq al-shṡr*, cf. Dietrich, op. cit., note 14 above, bk 2, no. 72: "Stammpflanze für die Gerste ist *Hordeum vulgare* L. und Var., Gramineae"; al-Kindī uses it in a dental medicine to "sweeten the teeth and to strengthen the gums" (Levey, op. cit., note 32 above, p. 293, no. 168).

⁹⁹ *shīḡ*, cf. Dietrich, op. cit., note 14 above, bk 3, no. 26: "ist bei den Arabern anscheinend Sammelname für viele oder alle Beifussarten"; al-Kindī employs Armenian wormwood in a tooth medicine to polish the teeth, remove the decay, treat bad breath, and protect the mouth (Levey, op. cit., note 32 above, p. 296, no. 177).

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cyperus,¹⁰⁰ lemon-grass and red alum.¹⁰¹ One should, however, not use the toothbrush too much because it abrades (*saḥaja*), corrupts (*afsada*) and decreases (*naqaṣa*) the gums, and it moves the teeth. But one should rub (*dalaka*) one's teeth with a coarse piece of cloth with a cleaning toothpowder if one wants them to be clean and white.¹⁰²

In a chapter dealing with the stench and bad breath of the mouth¹⁰³ which is caused by corruption (*'ufūna*) of the flesh in the mouth, or by corruption (*ta'affun*) and decay (*ta'akkul*) of the teeth, or by corrupt (*'afīn*) phlegm in the stomach, he describes a compound medicine to be chewed and then states: "The patient should use the toothbrush (*siwāk*) continually according to my prescription with sweet cyperus, and white sandalwood,¹⁰⁴ for this is beneficial for a bad smelling mouth." As in the previous cases al-Majūsī recognises the value of a moderate use of the *siwāk* but warns against excesses.

Concerning the toothpick, Ibn Buṭlān states that one should not use it continuously between the teeth;¹⁰⁵ about the *siwāk* he says that it should be used with a piece of linen moistened with extract of roses.¹⁰⁶ It is probable that this advice is intended to prevent damage to gums and teeth.

In summary, it may be said that there was a pre-Islamic custom of cleaning the teeth with the *siwāk* to get them white and shiny. Although we do not know the extent to which the *siwāk* was used during the pre-Islamic period, it was certainly very popular in the Islamic period. We can derive this from the different Ḥadīth narrations about the intensive use of the *siwāk* by the Prophet. For these stories try to authorize a current practice by attributing it to him and by setting him as a standard. Probably due to the literal imitation of the Prophet, the *siwāk* became so excessively used by the common people that it caused a twofold response: 1) from the educated elite who felt the need to limit the use of the *siwāk* to certain times and places, 2) from the physicians who strongly recommended the moderate use of the *siwāk*, because in this manner it would whiten the teeth and strengthen the gums. But its immoderate use, according to them, would injure the gums and displace the teeth. Thus, their warning in this respect is loud and clear.

¹⁰⁰ *su'd*, cf. Dietrich, op. cit., note 14 above, bk 1, no. 4: "Gemeint ist wohl *Cyperus longus* L. und Var., der Wilde Galgant, Cyperaceae"; al-Kindī uses it in a toothpowder to polish the teeth and to treat bad breath (Levey, op. cit., note 32 above, p. 282, no. 143).

¹⁰¹ *shabb*, cf. Schmucker, op. cit., note 80 above, p. 259, no. 418: "Alaun, Alumen, Aluminium-Kaliumsulfat. Meist bezeichnet der Name eine Mischung mehrerer Sulfate"; for the red variety cf. Dietlinde Golz, *Studien zur Geschichte der Mineralnamen in Pharmazie, Chemie und Medizin von den Anfängen bis Paracelsus*, (Sudhoffs Archiv, Beiheft 14), Wiesbaden, Franz Steiner Verlag, 1972, p. 233, note 52 (quoting M. Scotus' *Ars Alchemiae*: "alumen rubeum quod venit de Hanlap (= Aleppo)"; al-Kindī employs Yemenite alum in a drug for toothache and in dentifrices (Levey, op. cit., note 32 above, p. 291, no. 164).

¹⁰² MS Ayasophia 4713 a, facs. ed. Frankfurt am Main 1985, pt 2, first half, ch. 17, pp. 60–1.

¹⁰³ Op. cit., note 102 above, ch. 79, 425ff.

¹⁰⁴ *ṣandal abyad*, cf. Schmucker, op. cit., note 80 above, pp. 282–3, no. 461: "Das weisse Sandelholz von: *Santalum album* L. (Santalaceae)." Al-Kindī employs it in a toothpowder, cf. Levey, op. cit., note 32 above, pp. 298–9, no. 183.

¹⁰⁵ Ibn Buṭlān, op. cit., note 37 above. The Arabic text reads: "yukrah li-l-insān . . . wa-maḍr mā yukassiruhā wa-al-ilḥāḥ bi-l-khilāl baynahā". Elkhadem's translation (p. 215) for *baynahā*: "dans les intervalles" should be corrected to "between them", namely, the teeth. Ibn Buṭlān makes this statement while referring to three authors, namely, al-Rāzī, Bakhtīshū' and Yūḥannā.

¹⁰⁶ Ibn Buṭlān, op. cit., note 28 above, p. 215.