

ŠMN RAḤUŠ

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Excavations at the city of Samaria carried out in 1910 uncovered ostraca in the storerooms close to the king's palace (8th century BCE), and of these, ten bore an inscription reading: 'nevel šmn rḥš'. Many studies have dealt with the term 'rḥš' and the consensus seems to be that it refers to a type of oil produced from the olive tree. Our study shows that the term 'šmn rḥš' which appears on the Samaritan ostraca was preserved in several medieval sources which relate either to the choice olive oil that was produced in al-Sham (the Land of Israel and Syria) under its Arabic name 'Zait al-maghsūl', which means 'washed oil', or to the oil of Palestine known as 'Zait al-Filastini'. The oil underwent a process of washing in water to remove its characteristic accompanying taste and odour in order to transform it into a basic, neutral oil, probably for the purpose of mixing with spices or other aromatic oils. Evidence of the technique of oil production and the vessels referred to in the Arabic sources may be found at several archaeological sites in the Land of Israel which are dated to the Iron Age. We suggest that the oil in question is a distinctive variety of oil, one of the exclusive quality products that were stored in the 'treasure house' of the kings of Israel.

At excavations of the city of Samaria carried out in 1910, 102 ostraca were discovered in the storerooms close to the king's palace, and of these, 63 with ancient Hebrew writing were published by the excavators (Reisner et al., 1924, 227–246). The rest of the ostraca were published in I.T. Kaufman's dissertation and according to his reading, the number might rise to 107 (Kaufman 1966). These inscriptions were given intensive attention owing to their importance for philology, the study of writing, the names of individuals and the place names in the patrimonial estate of Manasseh, and the system of organized tax collection during the days of the kings of Israel.

The texts on the ostraca are almost uniform and may be divided into two groups. The first contains ostraca on which were written: the date (in words), the place name, the name of the person, and the content of the shipment. The second group does not specify the content of the shipment. In the first group of ostraca, two agricultural products appear regularly: *nevel yn yšn* and *nevel šmn rḥš* (שמן רחץ). (The term with its diacritic punctuation will appear later in this article, since it is contingent on the interpretation it is given.)

It had been commonly assumed that this referred to the record of shipments of oil and wine which were brought as tribute to the king from villages in the Samaria district in a *nevel*, a vessel or pitcher used for liquids. This term has been used in the Bible regarding wine (see: 1 Samuel 10.3, 25.18; Jeremiah 13.12). J.L. Kelso notes that *nevel* might also refer to a leather bottle (Kelso 1948, 25–26), but in the Bible it seems to refer to a clay vessel (see Isaiah 30.14; Jeremiah 48.12; Lamentations 4.2). According to most scholars, the ostraca must be dated to the 8th century BCE, although there is no unanimity as to which king reigned during the period involved. This article will deal with the interpretation of the term 'שמן רחץ' (*šmn rḥš*).

In ten ostraca an inscription was found with the text *nevel šmn rḥš* (nos 16–21, 53–55, 59). Many studies have dealt with the significance of the term *rḥš*, and it seems that the general view has been that it refers to oil produced from the olive tree (*Olea europea*). Until the present time, no equivalent from that period has been found for the term *rḥš*, although according to Tur Sinai, it should be compared with the expression appearing on the ancient

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invocation against demons found in an inscription at Arslan Tash in northern Syria, which reads 'שמן ות רחצת' referring to washing the body with purifying olive oil' (Tur Sinai 1948, 57). Demsky also has recently proposed that it refers to bath oil, perhaps with the addition of a fragrant spice (Demsky 2007, 333–336). However, the expression *šmn rḥš* in the Samaritan ostraca is not a verbal noun but rather an adjective for oil, cited in a bureaucratic inscription.

Several researchers have thought that this term refers to an item of food or a cosmetic product, such as oil used for cosmetic purposes (*šmn hatôv*, 2 Kings 20.13; Psalms 133.2, and more), which was designed for anointing during bathing (Negev 1967, 167). Another explanation is that this oil was used as soap for washing and purification (Diringer 1934, 37–38; Gibson 1971, 8; Israel 1975, 17–20; Lemaire 1977, 45–47), or for cleaning in the sense of toiletry oil, literally oil for cleansing (Lipinski 1977, 85–86). According to these explanations, one must read it *šmn roḥaš* (שמן רחץ), that is, as an abstract noun = '(for) washing'. However, the most common interpretation is that the reference is to pure oil/refined oil/purified oil/fine oil, all of which signify the superior quality of the oil rather than the use to which it was put (Diringer 1934; Savignac 1935, 292–293; Pritchard 1969, 321; Lemaire 1977; Rosen 1986–1987, 40; Renz 1995, 83; and Rainey and Notley 2006, 221).

Several scholars have proposed this same meaning except that they read the term *rḥš* as the passive participle רחץ=*raḥuš*. For example, Noth (1927, 220) refers to 'gereinigten Oles' and in a note refers to clean oil which has been separated from the olive oil pulp that sank to the bottom of the separating vessel. The possibility of calling it *šemen raḥuš* is also cited in Diringer (1934, 37–38), Lemaire (1977, 47), Renz (1995, 83) and Moscati (1951, 27), as well as by other scholars mentioned below. However, they did not bring any concrete explanation for this reading of the meaning. Sasson followed this reasoning and contended that the reference was to a food item and not to a cosmetic product. He attempts to prove this on the basis of the connection between oil and wine in the Samaria ostraca and in the Arad ostraca, as well as in other verses in the Bible that mention both as food items, as in 2 Kings 2.14 and others (Aharoni 1975, 20, 26). Sasson believes that *šmn raḥuš* refers to a stage in the refining process of the oil, possibly a technological term, or a denotation of a specific kind of special oil (Sasson 1981, 1–5).

In effect Sasson does not explain what this purifying process is exactly or how it is carried out. Stager took one step further, proposing that the term *raḥuš* is a technical one referring to the technique by which olive oil was extracted from the olives. He maintains that the term refers to the first, most superior form of oil, virgin oil, which is produced after the first crushing or cracking of the olives. He relies on a description of the traditional method of producing pure olive oil as reported by Gustaf Dalman in the 1930s, in various parts of the Land of Israel. In one of these methods widespread in Galilee, they would put the crushed olives into vessels made of clay tempered with dung. Then either hot or cold water was poured over the olives and, after stirring, the oil that floated to the top was skimmed off by hand or by utensil. The remaining pulpy mixture was poured into a rectangular pit and after being subjected to a second heating, the oil — this time slightly inferior — was again skimmed off. In the central and southern part of Israel, similar methods were employed. The olives were pounded in natural bedrock, mortar-like indentations using 'pestles' made of stone and wood, or were crushed using stone rollers rolled over the bedrock surfaces. The crushed olives were then soaked in hot water and squeezed by hand, after which the oil rose to the top and was skimmed off (Dalman 1935, 235–238).

Stager thus explained that the term *raḥuš* refers to soaking olives in water after crushing them, in order to extract the first oil, and he maintains that this is the dialect of Samaritan (or north Israelite) Hebrew and is equivalent to the biblical term *šmn ktyt*, literally, crushed oil (Exodus 27.20; 1 Kings 5.25, and others) and perhaps even 'the first of oils' mentioned in Amos 6.6 (Stager 1983, 241–245). In a footnote he cites evidence of a similar

use in Mediterranean regions such as Crete. Suriano supported Stager's view and suggested that one should interpret the term *yn yšn* in a similar fashion as denoting the method of manufacture, typical of north Israelite Hebrew — which he opines is parallel to the biblical term for 'lees or dregs', as in Isaiah 25.6 (Suriano 2007, 27–33). However, though Stager's proposal is attractive, it does not correspond to our reading of the term *raḥuṣ*; dipping or soaking in water is not washing. The term *raḥuṣ* is better suited as an adjective for the oil which underwent an intensive washing or cleaning process. This article will present a new explanation for the term '*šmn raḥuṣ*'.

ŠMN RAḤUṢ — WASHED OIL

The term *šmn raḥuṣ*, which appears in the Samaria ostraca, was apparently preserved in several medieval sources that refer to the finest quality olive oil that was manufactured in the land of Israel and Syria. In that period, the best known oil was the *ẓait al-infaq* oil, a term in rabbinical literature that was known by its Greek name *anfa-kinon* (= *omphakion*). (For a summary of the Talmudic sources, see Tahores 1945, 22.) The original meaning of this term was olive oil produced from unripe olives, but during the Middle Ages, it was also used generally to refer to olive oil. This olive oil is one of the export products from the land of Israel during the Early Islamic Period, until the 12th century (Amar 2000, 148–150). However, in addition to this, other synonyms in Arabic are mentioned in this context, such as *ẓait rikabi* (oil that is exported on the backs of beasts of burden) (see Meyerhof 1940, no. 131) and *ẓait al-Filastini* (Renaud 1934, 17).

The Andalusian Jewish physician Ibn Biklarish (11th–12th century) wrote of the *ẓait al-infaq*: 'Some say that it is the white olive oil and it is the *ẓait al-Filastini*, and others say that it is washed oil (al-maghṣūl; **المغسول**).' Later he explains the term 'washed oil': 'There are those who say that it is the oil made with water until it whitens and changes its colour and odour. Afterwards it is used like all of the other oils, and so it becomes a basis for them, and many physicians think this is so.' He also cites an ancient Arabic tradition that relates the antiquity of the oil industry in the land of Israel to earlier pre-Islamic periods: 'The olive has survived for three thousand years, . . . and every olive in Palestine comes from plantings by the nation before Rome [= the Byzantines], and they are the nation known as Greek' (Serri and Amar 2000, 66). According to this source, there was a technique in the land of Israel for washing the olive oil in water, which was designed to remove the accompanying odour and even to whiten its colour, in order to prepare it as a basic neutral oil, probably for the purpose of mixing it with spices or other aromatic oils. Washed olive oil (*ma'asul*) appears, for example, in the context of the preparation of medicinal oils in the treatise written by Sabur Ibn Sahl (d. 869) (Sabur Ibn Sahl 1994, 170).

The description by Ibn Biklarish is based mainly on the treatise of al-Zahrawi, a physician of Cordoba (936–1013), in which al-Zahrawi describes the technique for producing washed oil.

The *Duḥn al-Rikabi* — The oil should be washed — according to this method — until it becomes colorless and odorless, when it will be called the *duḥn al-Rikabi*. It was so called inasmuch as it constitutes a vehicle for all [substances] that are mixed, dispensed and applied with it. Here is how it is [prepared]: Take new oil good in smell and delicious to taste, with no apparent quality or strength, and put it in wide pots in the sun. Then add potable water to it: and lift up [the oil] with scoops and change the water day after day. This is done continuously until [the oil] whitens and becomes colorless. Leave it until the oil floats to the top of the water, collect and take out for [storage]. This you do if you are in a town where there is no glassware.

But to wash it in glass containers is more elegant and much better. Take a glass container, of such size as to hold two to three *ratls*, having openings, one narrower than the other. The wide opening

— which could be closed by the thumb — is at the top, and the narrow — which is only wide enough to pass a probe — is at the bottom. Then pour in the oil and the hot water, to two-thirds of the container's capacity, then put your thumb on the mouth [the top opening] and your finger on the hole [the bottom opening] and shake well. Then leave in the sun for an hour until the oil floats to the top of the water. When the oil floats to the top of the water then, take off the piece of cotton — which was put in the bottom [opening] — and let the water drain. Do the same repeatedly until [the oil] whitens and becomes colorless and odorless. (Hamarneh and Sonnedecker 1963, 99–100)

In experiments that we conducted in the lab at Bar-Ilan University, we succeeded in reconstructing this process using a simple technique of repeatedly washing olive oil in a separator funnel, in accordance with the second method of production described by al-Zahrawi.* The product thus obtained was a thick, oily, white liquid constituting some 10 per cent of the original olive oil. The whitened oil had completely lost all of its odour and flavour.

ARCHAEOLOGICAL EVIDENCE OF WASHING OLIVE OIL IN ANCIENT TIMES

Is there ancient evidence from the biblical period of the technique of washing oil, similar to that described by al-Zahrawi? I would venture that there is no clear mention in the Bible of such oil (I will offer a possible commentary later), but there may be archaeological evidence of it. To date, individual vessels have been discovered in the land of Israel which are perforated in the base and are dated to the Iron Age:

- A. Beit Shemesh — find at Stratum II (7th–10th century BCE). The bottom part of a large clay vessel, with a hole for draining in its base. (Grant and Wright 1938, pl. LXVII, no. 21) (Fig. 1).
- B. Megiddo — clay vessel with hole for draining in the middle of its base (11th century BCE) (Loud 1948, 44: Fig. 87, no. 13; pl. 256, no. 6). This is an unusual vessel because in addition to the hole it has a handle close to the base. The vessel is poorly preserved, such that the complete shape cannot be reconstructed (Fig. 2).
- C. Kuntilet 'Ajrud (800 BCE) — five jars were found with a hole in the centre of the base and a fragment of a jar with a hole between the side and the base which was stopped up with a wooden plug wrapped in a piece of cloth (Ayalon 1995, 162, 179–181, Fig. 23:6; 24).

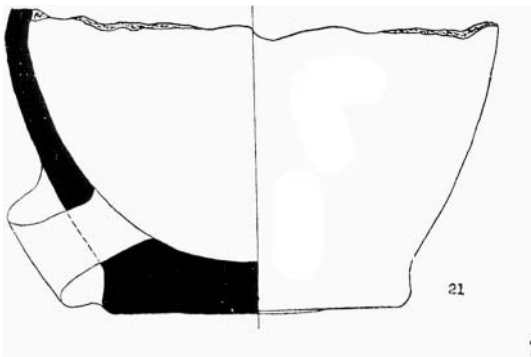


Fig. 1. Beit Shemesh — vessel with drain hole at the base.

* I wish to express my gratitude to Dr David Iluz and the students of Nati Lieberman for help in preparing these experiments.



Fig. 2. Megiddo — clay vessel with hole for draining in the middle of its base.

- D. Hazor — Strata VI and VIII (8th–9th centuries BCE). Two perforated storage jars (Yadin et al., 1960, pls 60:12, 72:2).
- E. Lachish — Stratum III (8th century BCE) — storage jars whose bases are conical. In two jars there are wide openings (3–4 cm) in the wall above the base, and in the third a smaller opening in the bottom third of the jar (Zimhoni 1990, 3–52, figs 9:1, 11:2, 15:7; 1999, 287–289, figs 5.10.1, 5.12.2).
- F. Ein Gedi — it seems that the most interesting example was found at Tel Goren (Ein Gedi) in Stratum V from the end of the 7th century BCE. In one of the barrels found on site there was an opening (25 x 80 mm) slightly above the base (Fig. 3). The excavators surmise that this was part of an industrial assemblage that was used to produce perfume (Stern 2007, 85; Yezereski 2007, 103–104).
- G. Tel Mikneh — two additional vessels were found at Tel Mikneh from the 7th century BCE; one vessel had 11 handles and 2 round perforations along its middle section. The second vessel had one perforation near its base, and it belongs to the type of storage vessels found at ‘Tel Migne (Gitin 1987, 84; Eitam and Heltzer 1996, pl. 30).

In most cases these were vessels of the large storage type, and their distribution throughout the entire land of Israel in the Iron Age indicates that this was probably not coincidental. It is noteworthy that perforated vessels stopped up with a piece of cloth were also found in Nahal Hever from the Roman period (Aharoni 1961, 155), which attests to the fact that these vessels continued to be in use during even later periods, apparently serving the same purposes. It may be that following this study, a greater emphasis will be placed on vessels of this kind, a greater awareness that might facilitate the finding of more such jars.

What was the purpose of these holes or perforations? Zimhoni (with regard to the vessels from Lachish) did not give a specific explanation for their function but surmised that one must distinguish between the vessels with a large hole, which were used to store dry produce, and the jar with a small hole, which was used to store a liquid product (Zimhoni

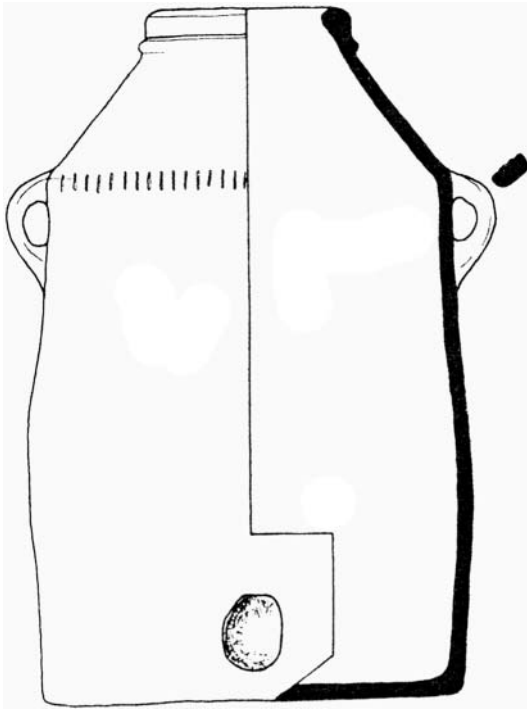


Fig. 3. Tel Goren (Ein Gedi) barrel with an opening slightly above the base.

1990, 5). Ayalon has proposed (regarding the jar uncovered at Kuntillet 'Ajrud) that their perforated bases might have been used as a kind of funnel, after the vessels themselves had been broken. Alternately, in the whole vessels, the perforations may have enabled the slow dripping of thick liquids such as fruit syrup from fruits undergoing fermentation (Ayalon 1995, 180–181).

With regard to the jars from Tel Migne, Gitin and several scholars have proposed attributing them to the olive oil separation process, i.e. that the reference is to vessels that were used to purify oil and whose purpose was to separate the oil and the juice: the light oil floats above the heavier layer of watery lees which was drained out through the perforation in the base of the jar (see Stager and Wolff 1981, 95–102, no. 10; Gitin 2006, 31). R. Frankel expressed scepticism about whether the oil separation technique was accepted practice using these vessels in Ancient Israel in the biblical period (Frankel et al., 1994, 78). The simpler technique was to remove the oil using a ladle or other appropriate scooping device (Frankel 1999, 175). Eitam points to a method of separation that involves using bedrock installations; the olives were crushed in a central indentation in the rock, and the clean oil at the top flowed through channels or holes opening on to a side purifying basin which was on a lower level (Eitam 1979, 146–155; 1983, 23–27).

The vessels found in the land of Israel from the Iron Age are apparently similar to the separator vats used in the isle of Crete. These are large oil vats (more like barrels) made of clay, that hold 58 to 90 litres of liquid. The vats are wide-mouthed on top and in the bottom near the base is a drain hole or spout. These vessels are dated to the late Bronze Age and the Hellenistic period (Forbes and Foxhall 1978, 37–47).

In effect, there is a difference between the vessels found at Crete that are more suited to separating oil from water, and some of those found in Israel, which are usually smaller, with a narrower neck and a smaller drain hole in their base. Especially noteworthy is the jar found in Tel Migne' (with the drain hole close to the base), the vessel from Beit Shemesh, and a similar jar to these found at Nicosia (Eitam and Heltzer 1996, pl. 15c). These are more in keeping with the description of al-Zahrawi. The vessel found at Megiddo has a handle close to the base (Fig. 2), and apparently also had a handle for grasping located in the upper part of the vessel, which facilitated holding the vessel comfortably for shaking it, a process in the washing of oil. Furthermore, in two cases evidence was found that the perforation in the base of the jar had been stopped up with a piece of cloth: in Kuntillet 'Ajrud, and in caves in the Judean Desert (from the Roman period) exactly as described by al Zahrawi.

In summary, there are several options to explain the function of the holes or perforations in the jars, and from the findings it seems that at least some of them were used for the oil washing technique. According to al-Zahrawi's accounts, there were also other methods used to wash the oil, which have not left any discernible imprint on the archaeological find. It is possible that for this purpose they used other vessels, such as the tubs found in the city of Samaria, which had a spout along their base for draining liquid, and the researchers call them 'footbaths' (Crowfoot 1932, 179–187). At any rate, it appears that the probability that these vessels were used to separate oil from the watery lees is low, for if so, why were so few of this type of vessel recovered; the pure refined oil — *šmn zyt zk* and *šmn ktyt* — were certainly not rare commodities. Therefore it seems more probable that these vessels were used to wash oil and drain out the watery lees using this process. The fact that these vessels are not always uniform also seems to indicate that they were especially adapted for a production process that was not common.

SUMMARY

'*Šmn raḥuṣ*' in the Samaria ostraca could aptly be interpreted as oil that has been washed, namely, oil that has undergone a process of being washed with water. The root word 'רחץ' appears 72 times in the Bible and in the majority of instances it refers to the activity of washing with water and not the use of any other liquid, except for a figurative use in Song of Songs 5.12. This term alludes to the process by which it is produced and not its function; nonetheless it has become an adjective for a superior type of oil. This proposal is based on evidence of the preservation of a technique of this name — *šmn raḥuṣ* (in Arabic — *al-maghsūl*; المغسول) — in the context of the land of Israel in the Middle Ages (10th–12th centuries). These traditions attribute this product to the al-Filastini oil which was famous for its choice quality even from earlier periods.

According to al-Zahrawi's descriptions I have pointed out a possible identification of the isolated vessels used for washing (as distinguished from separator vats) that were discovered in several sites in Israel of the biblical period. Mention of this oil only in the Samaria ostraca and the scant archaeological findings alluding to this technique attests that this was a unique oil, not in widespread use among the local population as a food item but rather as a product utilized in the cosmetic industry. The product that was obtained from reconstructing the technique of washing olive oil is a whitened, thick, opaque oil, and in that sense is neither refined oil nor does it even fit the term *šmn zyt zk* (pure olive oil). Nonetheless, its whitish colour and the absence of the typically dominant odour of the olive qualified it for the preparation of cosmetic lotions and as an oily base for perfume. In the ancient world they used various oily bases. For example, the best quality oil was produced from the *Moringa peregrine*, a tropical plant which was raised only in the Jordan Valley (Amar and Serri 2004, 83), but undoubtedly olive oil was the most commonly used. On the assumption

that this type of oil is mentioned in the Bible, the term *šmn rwqh* or perfumer's ointment (Ecclesiastes 10.1) is the most appropriate term. Olive oil was one of the ingredients in the '*šmn hmšhh*' (anointing oil) (Exodus 30. 25–26), and may have been the subject of the description '*šmn twwb*' (precious ointment). *Shemen tōv* is perfumed oil, which is also the meaning of the word *tib* in Arabic (2 Kings 20.13; Ecclesiastes 7.1, and more) and *šmn sassōn* (the oil of joy) (Isaiah 61.3). This oil had previously undergone washing which prepared it to absorb the perfumed spices that permeated it.

This is, then, a different kind of special oil that was used to produce cosmetic items and perfume, and finding the inscription *šmn raḥuš* in the storerooms connected to the complex of the king's palace in Samaria, the capital of Israel, indicates that this was not regular oil but rather a product of value that was given only to the king and court dignitaries (Rainey 1962, 62–63). In that case, *šmn raḥuš* like *yn yšn** is one of the precious products stored in the 'treasure house' of the kings of Israel, and the complex of storerooms in the city of Samaria may show us how *bet nekoto* (the house of his treasures) of the kings of Judaea and Israel looked in the biblical period, containing, among other things, spices and the *šmn twwb* (2 Kings 20.13; Isaiah 39.2).

NOTES

¹ The ostraca found at Samaria have been the subject of much research; a comprehensive bibliography was written by Yigael Yadin (1959, 184–187; see also Rainey, 1967, 32–41; Lemaire 1977, 23–24; Aharoni, 1988, 277–285; Avigad, 1993, 1310; Ahituv, 2005, 298).

² *Yayin yašan* is mentioned in the rabbinical literature, and it refers to wine that is one year old, as opposed to *yayin ḥadaš* (new wine) (Mishnah, *Tavul Yoma* 1:2; *Avot* 4:20; B. Talmud, *Qid* 20a). There is also *yayin m'yušan*

which is three years old (Mishnah, *B. B.* 6:3) and is apparently parallel to *yayin yašan 'atik 'atiki* (B. Talmud, *Pes.* 42b). To the incense that they used to burn on the altar, they added (as a substitute for the Cyprus wine) *hemar hūver* (or alternately, *hūvin*), i.e. old white wine (B. Talmud, *Ker.* 6a; J. Talmud *Yoma* 41:4). It is very evident that this referred to the choicest wine because it was also poured on the altar, see Z. Amar (2002, 134).

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* I would like to thank Dr Eitan Ayalon and Prof. Aren Maeir for their important comments on this article.

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