

HALACHIC AND HASHKAFIC ISSUES IN CONTEMPORARY SOCIETY

51 - TECHELET - PART 2 OU ISRAEL CENTER - SPRING 2017

A] THE MODERN SEARCH FOR TECHELET

A1] IS IT LEGITIMATE TO SEARCH?

1. מצוה להביא לבן ותכלת ויעשה. אימתי? כשהוא תכלת, ועכשיו אין לנו אלא לבן, שהתכלת נגנז

מדרש תנחומא (בבב"ר) פרשת שלח

We saw in the previous shiur that the one of the earliest sources to indicate that Techelet was no longer available is in the Midrash Tanchuma. Its dating is unclear but probably dates back to around 750 CE. By that time the Techelet was 'nignaz'. Does this mean that the Techelet is now beyond our grasp?

2. כי האמת הוא שבזמן הזה אחרי החורבן אין בנו כוח להטיל תכלת, כי אין אנו משיגים רק עד מוח בינה דאמא

פרי עץ חיים שער הציצית פרק ה'

The Arizal writes that, for kabbalistic reasons, after the Churban, we are unable to use Techelet.

3. תניא היה ר"מ אומר גדול עונשו של לבן מעונשו של תכלת משום דלבן מצוי הוא בכל מקום ובנקל להשיג ועם כל זה לא עשה, לפיכך עונשו מרובה משא"כ בתכלת שדמיו יקרים וקשה להשיג, לפיכך אין עונשו גדול כמו בהעדר לבן. ובעונותינו מזמן שנתפזרו אין לנו תכלת ואין אנו יודעים מזה כלל וכל ציצת שלנו לבן ומ"מ אנחנו מקיימים המצוה כתקונה דכבר נתבאר דהתכלת אינו מעכב את הלבן. ולכן מי שמבטל מצוה זו עונשו מרובה. ודע שזה שנים ספורות שאחד התפאר שמצא החלזון ועשה ממנו תכלת והמשיך אחריו איזה אנשים אך לא היה לו שומע מגדולי הדור ומכלל ישראל ונתבטל הדבר עד כי יבא גואל צדק במהרה בימינו, אמן

ערוך השולחן אורח חיים סימן ט סעיף יב

The Aruch Hashulchan¹ totally rejects the purported rediscovery of Techelet² and states that Techelet may not be renewed until Mashiach comes!

4. ואפשר שעד היום הוא מצוי אלא שאין מכירין אותו או שאין יודעין לצודו

שו"ת רדב"ז חלק ב סימן תרפה

On the other hand, other mefarshim understand that the Chilazon and Techelet ARE accessible but we have just lost the knowledge to find them. If we could regain that information, we could renew the Techelet.

A2] TIFERET YISRAEL (GERMANY 1782-1860)

• One of the first modern mefarshim to revisit the issue of Techelet was R' Baruch Yisrael Lipschitz. In his commentary on the Mishna - Tiferet Yisrael - he wrote an introduction to Seder Moed - Kupat HaRochlim - in which he deals in depth with what would be needed to remake the clothes of the Cohanim in order to rebuild the Mikdash.³

• One of his conclusions is that the Techelet dye may NOT need to come from the Chilazon but would be kosher as long as it was the correct color and a permanent dye.



1. Following other earlier mefarshim including the Yeshuat Molcho.

2. At that time by the Radziner Rebbe - see below.

3. Note that in 1799 Napoleon issued a declaration urging the Jews of Africa and Asia to help him to conquer the Holy Land so that he could rebuild the Temple.

A3] R' GERSHON CHANOKH LEINER - THE RADZINER REBBE (POLAND 1839-1891)

- The conclusions of the Tiferet Yisrael were strongly opposed by the Radziner Rebbe. R. Leiner was a brilliant talmid chacham. He was also a linguist and knowledgeable in chemistry, engineering and medicine.
- He wrote a sefer - *Sefunei Temunei Chol* - on Techelet and proposed that the Chilazon was in fact a type of squid known as the cuttlefish - *Sepia officinalis*.
- He travelled to visit the newly opened great aquarium in Naples to research the matter and become convinced that the Techelet was made from the black ink of the squid.
- Unfortunately the color produced by the ink washed out quickly and thus did not qualify as Techelet. So he appealed for help from local chemists until one non-Jewish chemist provided him with additives (including iron filings) to add to the dyeing process. These successfully result in a fast blue dye!
- The Rebbe returned to Radzin and, within a year, 10,000 Radziner Chassidim were wearing the Techelet!
- Most gedolim were not convinced and the Rebbe wrote two more sefarim on the subject - *Ptil Techelet*, and *Eyn Hatechelet*, setting out his proofs and chronicling the correspondence he had received on the issue from other poskim.

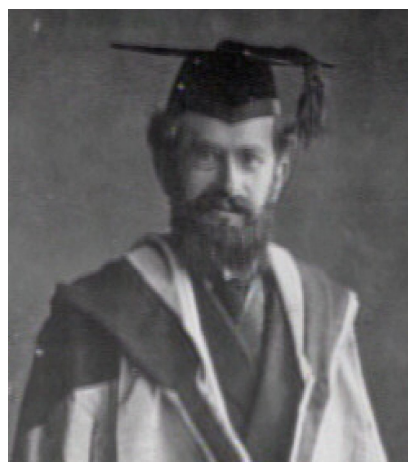
A4] ACADEMIC ADVANCES

- In 1858 French zoologist, Henri de Lacaze-Duthiers was sailing in Minorca when he noticed a local fisherman painting yellow streaks onto his shirt with the juice of a snail that he had broken open. The stains soon turned red in the sunlight and Duthiers realized that this could be the source of the ancient Tyrian Purple!
- In 1909, German chemist Paul Friedlander identified the chemical structure of this dye as dibromoindigo and showed that this was a major component of the dyes of other mollusks in the Mediterranean area.

A5] R' ISAAC HALEVI HERZOG (ENGLAND/IRELAND/ISRAEL 1888-1959)

- In 1914 R' Isaac Herzog (then a Rabbi in Ireland) wrote a doctoral thesis⁴ on Techelet.⁵ As part of his research he examined the dyeing process of the Radziner Rebbe, corresponded with the Radziner dyeing factories and sent samples of the Radziner Techelet to leading dye experts in Germany, France and England.

- To his great surprise, all the labs confirmed that the blue color in the Radziner Techelet was NOT due to the squid ink, but was a by-product of the other chemicals which had been added. The dye was in fact Prussian Blue - ferric ferrocyanide $\text{Fe}_7(\text{CN})_{18}$ - which was formed when the organic compounds in the squid-dye broke down, and the constituent atoms of carbon and nitrogen combined with the iron filings in the intense heat of the dying process.



- Rav Herzog concluded that the Radziner Rebbe had been duped by the chemist who advised him and that the Radziner Techelet was certainly not authentic.⁶
- Rav Herzog was convinced⁷ that the Chilazon was in fact the murex trunculus (also known as the hexaplex trunculus) snail but was unable to produce the correct colored dye. Rather than blue, it always came out as purple.
- He suggested instead that the Techelet could be the Janthina sea snail. However, this also produced dye of the wrong (brown) color and Rav Herzog died in 1959 without having solved the problem.

4. Which can be downloaded at <http://tekhelet.com/pdf/HerzogDoctorate.pdf> and see also <http://tekhelet.com/herzogreadingroom/>. The thesis has been reprinted as *The Royal Purple and the Biblical Blue: Argaman and Tekhelet* (available on Amazon at <https://www.amazon.com/Royal-Purple-Biblical-Blue-Tekhelet/dp/B000PW7MWC>)

5. Or, as he dubbed it, 'Hebrew Porphyrology'.

6. Tragically the Radziner communities were wiped out in the Shoah and the dyeing factories destroyed. The knowledge of how to make the dye was lost by the Chasidut. However, after the war the surviving Radziner Chassidim in Israel wrote to R' Herzog to obtain the information on the process; he had the only remaining correspondence on the matter from 20 years earlier. He instructed them on how to recreate their traditional cuttlefish dye but informed them that it was not authentic! Ironically, they listen to him on the former but not the latter, and continue to wear the Radziner Techelet to this day (as do some Breslov Chassidim).

7. He writes: "It is very unlikely that the tekhelet-hillazon is not the snail called murex trunculus, but though unlikely, it is still possible."

A6] ARCHEOLOGICAL DISCOVERIES

• In the 1960's a piece of blue-dyed Herodian fabric was discovered by Yigael Yadin in the excavations on Masada. Tzitzit were also found close by. Chemical analysis has shown this to be dyed by the murex trunculus snail⁸!

A7] CHEMICAL DISCOVERIES

• In the early 1980's chemist Otto Elsner accidentally discovered that, whilst the secretions from the murex trunculus produce a purple dye (as Rav Herzog had found to his frustration), when the dye was exposed to sunlight it turned blue! Together with other experts he determined that the trunculus dye had photo-chemical properties such that, when in its reduced state (which is essential for dyeing the wool), exposure to ultra-violet light will transform the blue-purple color to pure blue.⁹

A8] MODERN REVIVALS

• Based on the chemical discoveries of the 1980's, R' Eliyahu Tavger¹⁰ began to research the halachic issues in order to ascertain whether Techelet could again be made for tzitzit. He became convinced that the murex trunculus was in fact the biblical Techelet and a few years later, in 1993, the non-profit Ptil Techelet organization was founded to produce Techelet for tzitzit.¹¹

B] IS THE MUREX TRUNCULUS REALLY THE CHILAZON - ASSESSING THE EVIDENCE

B1] MUREX TRUNCULUS - PROS¹²

Archeology

- Massive archeological finds of murex snails trunculus snails in dyeing factories all along the Mediterranean Coast.
- The archeological find of blue fabric at Masada.
- Tryian coins (and also a coin from the Bar Kochba period) bearing pictures and motifs of the trunculus snail!
- Detailed descriptions by Pliny and Aristotle of the snails, where to find them and how to dye with them.



Murex Trunculus

Chazal¹³

- Sea creature - 'beriato domeh ledag'.
- Buried in sand - 'sefunei temunei yam'
- Surrounded by a shell - 'nartik' - which grows with it.
- Needs to be cracked and squeezed to extract the dye.
- The steadfastness of the murex dye.
- The Chilazon is found on the coast of Northern Israel - 'Haifa to Tzur'.
- The dye is only effective when squeezed from the snail when alive.¹⁴
- 'Gufo domeh leyam' - color similar to the sea. Although the snail is brown and stripy when cleaned and polished, in its natural habitat it is covered in sea-fouling which makes it almost indistinguishable from the surrounding seabed.
- Talmud Yerushalmi describes techelet as 'porpherin', which is the Greek word for the murex.
- Rare and expensive.
- Chemically identical with indigo - kala ilan.
- Murex shells have been found near the homes of the Cohanim in Second Temple Yerushalayim.¹⁵

8. Yadin in fact concluded that the dye was in fact *kala ilan* - the fake techelet color produced by the indigo plant! In that scenario it would seem that the owners of the cloth had been duped by fraudulent sellers! Either way, it is likely that this is the authentic color of Techelet (which is identical to indigo).

9. For a very informative essay by Dr. Baruch Sterman for more details, see - <http://www.baruchsterman.com/Essays/MeaningOfTechelet.pdf>

10. Son of the famous and celebrated Ben Zion Tavger who rediscovered and rebuilt the Avraham Avinu synagogue in Chevron.

11. The Techelet factory in Kfar Adumim and sea-front at Hof Dor can be visited - see <http://tekhelet.com/>. In a visit to the factory in April 2017 I was told that 2900 sets of Techelet were sold in March 2017 alone.

12. See *Identifying the Chilazon*, Rabbi Chaim E. Twerski, Journal of Halacha Number XXXIV p77.

13. See the corresponding criteria listed with the sources in Part 1 of the shiur.

14. In order for the chemical dye process to be effective, the enzyme purpurase must be present. This denatures quickly after the death of the snail. (See below for the chemistry)

15. Some suggest as shop signs for techelet sellers.

B2] MUREX TRUNCULUS - CONS¹⁶

• 'Gufo domeh leyam' - the body of the sail is nothing like the color of the sea. Its shell (gufo) is only like the sea due to sea-fouling which covers it and which is sometimes blue, but sometimes not. This sea-fouling is also on everything else! And it really looks like the sea-bed (yam?) and not the sea.

• 'Beriato domeh ledag' - does dag mean fish or sea-creature? Murex spawns like a real fish but does not look much like one (although fish are very varied).



The Cuttlefish

• 'Comes up once in 70/7 years' - bigger problem. The murex has no such cycle. Is this midrashic and non-literal? Does it just mean that it is usually rare and then occasionally abundant¹⁷ to distinguish it from kala ilan.

• Murex is chemically identical with indigo, yet the Gemara gives a chemical test to distinguish between them.¹⁸

• Color of the 'blood' ie secretion. Rambam says this should be black. Murex is clear.¹⁹

• According to Chazal the 'Chilazon' is (i) good for hemorrhoids; (ii) has tentacles bent like hooks; and (iii) has red flesh-like warts. Murex has none of these.²⁰

• Archeological evidence is inconclusive. The millions of murex trunculus snails may have been used to make argaman - purple. Mixing of dyes was also common.

• Appearance of the murex on Jewish coins may have been due to its special status.

• Why didn't Chazal clearly and positively identify the murex snail as the Chilazon? There are words in Greek they could have used.

Rav Yisroel Reisman suggests additional reasons why murex trunculus is not the Chilazon:-

• Shabbat 74a - nets are needed to catch the Chilazon but are not used for murex. A - Baskets are used but one could easily use nets. Aristotle writes about this.

• Shabbat 75 states that one is chayav on Shabbat for trapping chilazon. Why? The snail is very slow and effectively halachically 'trapped' already so one should not be chayav²¹. A - (S.A. 497) one is chayav on Shabbat for catching anything for which one normally uses a trap.²²

• Chazal say (Sanhedrin 91) that the Chilazon comes up in a mountain after it rains. Murex can't be out of water. A - Yad Rama there suggests that this is talking about a different type of snail.

• If Kala Ilan is the same chemical why would the emperors use murex? A - Maybe they didn't know it was the same and thought the murex was more authentic.

• The Gemara never mentions that the Techelet dye must be exposed to sunlight. A - Chazal did not give all the details. eg it just says 'add herbs' without specification. Making the dye outside was natural and normal.

• Chazal say (Megila 6) that Zevulun brings in the chilazon. But Zevulun's portion was not on the shore! A - we need sailors to set traps further out and Zevulun had the boats.

• There is a machloket Rishonim if Chilazon is a fish or a snail. A - So it could be a snail!

• Given the differences of opinion on the number of Techelet strings (see below) how can this be resolved without definitive halachic sources. A - In other areas of hilchot tzitzit issues the Mishna Berura rules in two places²³ that there must be 2 strings of Techelet and 2 of lavan.

• Rav Reisman suggests that there is less than a 10% chance of being murex being the Chilazon which makes it a 'miyut she'eino matzui'. A - this concept is relevant in assessing the metziut eg bugs in a vegetable, not in this type of halacha.

In his article, Mendel Singer concludes "the evidence against *murex trunculus* as the *chilazon* is overwhelming". However Rav Herschel Schachter of YU has concluded that there is a 99% certainty that the murex IS the chilazon!

16. See *Understanding the Criteria for the Chilazon*, Mendel E. Singer, Journal of Halacha Number XLII. More objection are given in that article than included on this sheet.

17. Suggested by the Radziner. Rav Moshe Tendler suggests that it means that large numbers are found close to the shore at infrequent intervals.

18. Some respond that the test may pick up impurities in the indigo.

19. Many mefarshim question the Rambam's source for this halacha.

20. Some respond that the 'Chilazon' referred to in these Gemarot could be a different creature and not the the Techelet chilazon.

21. Note that this is also an issue or some of the shemoneh sherazim and may impact upon their identification.

22. See also *Ha-Zad Hillazon - Trapping the Murex Trunculus*, Mois Navon, Torah U-Madda Journal Vol 13 (2005) p128.

23. One issue is that of tzitzit which are made from different materials eg 2 cotton and 2 wool on a cotton beged., The other issue is that of 'gardumim' - tzitzit which started kosher and then part of the thread tore off. How many full strings must remain in order for the tzitzit to be kosher?

C] IF MUREX *COULD* BE THE CHILAZON - SHOULD WE WEAR TECHELET AS A SAFEK?**C1] ARGUMENTS AGAINST****1. Mesorah**

- We have no unbroken mesorah for wearing murex Techelet. Does that matter?
- R. Yosef Ber Soloveitchik of Brisk - the Beit HaLevi - opposed the Radziner Techelet on those grounds. There are two versions of his letter to the Radziner Rebbe.²⁴ The version quoted by the Soloveitchik families in the US and Israel is that a positive mesorah is required to begin wearing murex Techelet. Since there is no mesora, EVEN if the murex techelet is authentic, we still may not use it.

5. It is well known what happened between my grandfather, R. Yosef Dov HaLevi and the Gaon of Radzin The Rebbe tried to prove, based on much evidence, that this dye was the true techelet. R. Yosef Dov objected, saying that conjecture and proofs cannot prove anything concerning matters which rely upon tradition handed down from generation to generation. In such a case, argumentation cannot be the deciding factor, only tradition itself can determine it.²⁵ That was the way our fathers saw it, and acted thereon, and that is the way the sons have to continue acting.

R. Joseph B. Soloveitchik - Shiurim le-Zekher Abba Mori z'l p228

- However, the version of the Beit Halevi's letter which appears in the Radziner Rebbe's sefarim is very different²⁶! According to that version, the Brisker opposition was on the grounds that the Radziner Techelet was made from cuttlefish. Since all generations had been aware of that fish and STILL not used it as Techelet, this constitutes a 'negative mesorah' ie a mesorah NOT to use it. But the Beit Halevi accepted that if a good candidate could be found that earlier generations did not know about, he would be happy to consider it and if it proved to be true, we would be obligated to use it!²⁷
- Rav Joseph B. Soloveitchik of YU spoke about Techelet many times and was opposed on the grounds of mesorah. This is the practice of most in the Soloveitchik family.
- Rav Aharon Lichtenstein was opposed, as were his halachic mentors - Rav Hunter, Rav Yosef Soloveitchik, Rav Aharon Soloveitchik and Rav Shlomo Zalman Auerbach²⁸. However, many of the Lichtenstein children DO wear techelet.
- Rav Hershel Schachter rules that the argument from mesorah is invalid. Previous generations did not use it because they did not have it.
- Rav Eliyashiv (Kovetz Teshuvot 1:2) also says that one should not wear murex Techelet due to the lack of mesorah.²⁹
- Rav Shlomo Zalman Auerbach did not rule in favor of the murex Techelet.³⁰
- But how strong does mesorah need to be? Consider the fact that most people eat turkey without a clear mesorah³¹, even though the down-sides are very significant if indeed turkey is treif!

2. Difficulty in practical psak

- Rav Eliashiv also writes that, given the number of different shittot in how to tie tzitzit with Techelet and the lack of clear ruling on this in the Shulchan Aruch, we are left unable to decide between the shittot. In response Rav Schachter points out that the Mishna Berura does indicate that there should be 2 strings of Techelet and 2 of Lavan. As for the the different methods of tying (see also below), although it is impossible to fulfil them all, nevertheless the specific methods are not essential (me'akev) to fulfilling the mitzvah.

24. Note that the letter in question was NOT written by the Beit HaLevi but someone else on his behalf.

25. An extreme example of this is a debate which took place some years ago between Prof. Zvi Yehuda of Telz in Cleveland and Prof. Shneur Leiman. Prof. Yehuda grew up close to the Chazon Ish and quoted the Chazon Ish as saying that even if we were to find the original Sefer Torah of Moshe it would be invalid if it did not fit with our mesorah! R. Leiman disagreed.

26. This raises the question of why Rav Soloveitchik did not understand the Beit Halevi the same way. Did the writer of the letter misunderstand the Beit Halevi's position? Did the Radziner Rebbe misunderstand the Beit Halevi? Did the Beit Halevi say one thing to the Radziner and something else to his family?

27. Rav Eliashiv is quoted by R. Herschel Schachter as having stated that the Radziner version of the letter makes more sense. For more on the issue of mesorah and Techelet, see *Identifying Tekhelet: Masoret and Yedi'ah*, R. Moshe Tendler, Tekhelet: The Renaissance of a Mitzvah (MSYU 1996) p39.

28. But see below on Rav Shlomo Zalman's position.

29. Rav Eliashiv's position is complex. Rav Herschel Schachter recounts how Rav Eliashiv's opposition to techelet came about. The Ptil Techelet organization presented the murex techelet to him. He asked how much Techelet would cost if he started wearing in and all the Charedi world followed suit. The answer was that, due to the intense demand, the price would sky-rocket and be prohibitive. On that basis, Rav Eliashiv said that he would not wear it. This exchange was then published without authorization and Rav Eliashiv asked someone to publish in his name that he actively opposed the murex techelet. The result was the publication of a teshuva in Kovetz Teshuvot, which Rav Eliashiv later confirmed that he had not personally written!

30. But his position is also nuanced. Rav Menachem Borstein, an expert on Techelet (and author of the 450-page book on the issue - *HaTechelet* (1988)) told me that he discussed the matter at length with Rav Shlomo Zalman, who was unwilling to rule in favor of the murex Techelet. However he felt that if people began to wear it this would create a new halachic reality (maybe even a regenerated mesorah - see the following note on turkey) which would be relevant in future psak.

31. On the other hand, the Netziv (Meishiv Davar 2:22) felt that we DO have a mesorah for turkey now that Jews have been eating it for hundreds of years.

3. No Techelet before Mashiach

- We saw this position above - that the techelet was 'ganuz'. Rav Moshe Sternbuch also support this and states that Techelet has been removed because of hester panim. As such, in our days, when there is so much hester panim, it is illogical that there should be Techelet.³²
- Rav Eliashiv also quotes the problem of 'ganuz'.
- R' Chaim Kanievsky opposed the new Techelet very firmly.³³
- The Lubavitcher Rebbe had the same approach - we need Mashiach for Techelet.
- This was opposed by the Radziner who pointed out that Techelet is not one of the items listed by Chazal as ganuz.
- Techelet is also discussed by the Rif, Rosh and Maharil, who do not generally deal with halachic issues for the time of Mashiach, implying that in theory Techelet is still relevant today. So it seems that 'nignaz' is not a halachic concept.
- We also know that Techelet was in use long after the destruction of the Second Temple.

4. Tzitzit should be the same color as the corner of the beged

- The Pri Megadim rules that, ideally, the tzitzit should be the same color as the corner of the beged. If the murex Techelet is not authentic then there will be blue strings on a white corner.
- On the other hand, this concept is a chumrah. Rav Schachter feels that the potential up-side of wearing Techelet justifies the risk of losing the chumrah of 'min kanaf'

5. Lo Titgodedu - creating factions

- Rav Moshe Sternbuch is concerned with Lo Titgodedu - factionalization - if some wear and some do not. This would be more of an issue in public than private.

6. Bal Tosif - adding to the mitzvot

- Rav Sternbuch is concerned for Bal Tosif if people have kavana for a mitzvah deoraita but murex Techelet is not authentic.
- Rav Shlomo Miller is concerned for Bal Tosif if we include too many techelet strings - see below.

7. Kabbalistic concerns

- The Ben Yehoyada says that the sitra achara has a hold on kala ilan. which is what our new techelet could be. So, according to kabbala, it would be very negative to wear it.

8. Public reaction

- R. Yitzchak Elchanan Spector wrote to the Radziner Rebbe that he was convinced that Radziner Techelet was correct but would not wear it for 'political reasons'. The understanding is that he did not want to look strange as he needed to reach out to people through kiruv. Rav Herschel Schachter points out that this is a strange reason! Our primary role is to keep mitzvot and not to worry about how that will make us look.

9. Kashrut

- Is there a problem using a non-kosher animal for a mitzvah?³⁴

32. Rav Sternbuch accepts that this alone is not a basis for halachic psak. The issue of hester panim also reveals a critical hashkafic difference of view between the poskim. Are our times indeed dark times of hester panim? Or are they time of a beginning of gilui panim with the rising of the State of Israel and Jewish resurgence?

33. It sounds from the wording of Rav Chaim that he would have been more in favor if the Chazon Ish had supported it. This is partly due to the status of the Chazon Ish. It also clearly seems to be part of the reluctance of the Charedi world to accept innovations generally and especially when they emanate from the Religious Zionist or YU world. In fact the Chazon Ish himself is quoted as opposing the Radziner Techelet because it was clearly wrong, but he acknowledged that if there was a shade of doubt that a new techelet candidate was correct, one would be required to follow it because of safek deoraita lechumra - see below.

34. The basic answer is 'no', certainly in this case - see *The Hillazon and the Principle of "Muttar be-Fikha"*, Mois Navon, Torah U-Madda Journal Volume 10 (2001) p142.

C2] ARGUMENTS IN FAVOR

1. New Evidence

- Much of the language of those who oppose seems to indicate that they are dealing with the old Techelet of the Radziner. The new evidence relating to the murex trunculus requires a more serious analysis.³⁵

2. Safek Deoraita Lechumra

- If murex techelet MIGHT be authentic, do we not have an obligation to wear it in case we can keep the mitzvah?
- Rav Chaim Brisker objects that the concept of safek deoraita lechumra may only apply if, by keeping the safek, one will DEFINITELY fulfil the mitzvah, which is not the case here. Others respond that we do not rule this way in halacha.³⁶

3. Does Techelet definitely need to be from the Chilazon?

- Some poskim have suggested that, according to certain shittot, the Chilazon is not ESSENTIAL for techelet. Any dye which is permanent and of the correct color may be acceptable. The Tiferet Yisrael rules this way and some quote Rav Soloveitchik as learning this from the position of the Rambam.³⁷

4. No down-side

- 'Lavan' means any color other than techelet. So even if the murex blue turns out not to be authentic it will still qualify as 'lavan'. The Gemara states that even kala ilan qualifies as 'lavan', just not as techelet.

5. Bal Tigra - Taking away from the mitzvot

- The Rashbam rules that Bal Tigra does not apply to taking 3 minim on Succot, or including 3 parshiot in the Tefillin. In those cases, one is simply not yotzei the mitzvah. Rather, the Turei Even rules that Bal Tigra applies where one has the ability to fully a mitzvah 'beshleimuta' eg sprinkling blood on all 4 corners of the mizbeach and choosing to do so on one only (even though this fulfills the mitzvah minimally).
- As such, wearing lavan without techelet is Bal Tigra!
- If so, how have we been doing this for 1300 years? The Beit Halevi answers that Techelet was simply not available and we were forced to apply the principle of עשה דוחה לא תעשה - that fulfillment of a positive mitzvah overrides simultaneous breach of a negative mitzvah.
- Today, when Techelet may be available, one would be required to wear it in order to avoid Bal Tigra.
- Given that wearing tzitzit is in any event an optional mitzvah (if one does not wear 4-cornered clothing one has no obligation) Rav Schachter rules that it is better NOT to wear any tzitzit today if they do not include the murex Techelet!
- The shitta of the Ba'al Hameor was that Techelet is ESSENTIAL for the mitzvah, even today, and indeed, since he did not have Techelet, the Ramban reports that he did not wear tzitzit at all!!

D] HOW IS TECHELET TIED?

- The halacha is like Beit Shamai (one of 24 cases) that we use 4 long strings for tzitzit, doubled over to make 8.
- There are three basic positions on how many of these strings should be Techelet:

Rashi/Tosafot: 4 Lavan and 4 Techelet

Ra'avad: 7 Lavan and 1 Techelet

Rambam: 7½ Lavan and ½ Techelet

- There are different positions on how many chuliot, crichot and knots there should be. All agree that they must start with white and end with white. Otherwise, none of the requirements are me'akev bedieved.

35. One of the meta-halachic issues here is the extent to which poskim are willing to take into account scientific evidence in coming to a psak. Some poskim today are dismissive of the role of science and archeology in the halachic process. Others are more accepting, especially when it comes to establishing the metziut.

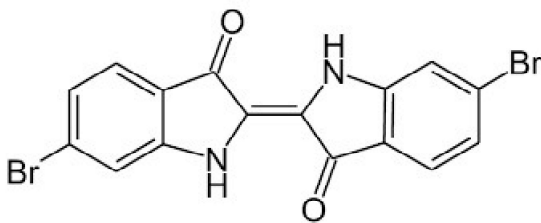
36. The Ran rules that one must take the lulav even during bein hashemashot because of safek deoraita lechumra.

37. See also *Substituting Synthetic Dye for Hilazon: The Renewal of Techelet*, R. Bezalel Naor, Journal of Halacha, Number XXIV p97.

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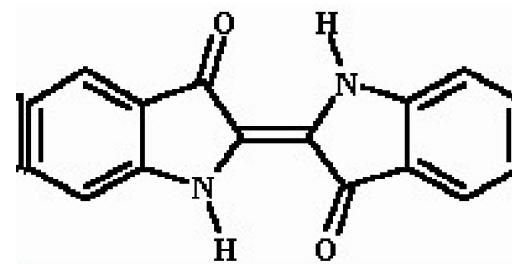
E] THE CHEMISTRY OF TECHELET



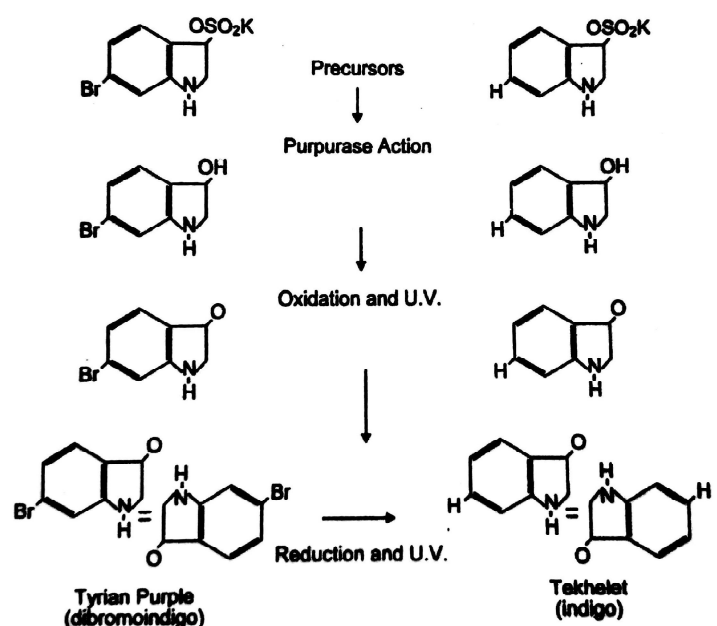
Molecular Structure of Tyrian Purple - Argaman
(with 2 bromine molecules)

Dyeing process:

1. Liquid is squeezed out of the hypobranchial gland of the murex trunculus. This includes indigo and also bromine molecules. It also includes the enzyme purpurase.³⁸
2. When exposed to air and sunlight, the secretion breaks down into a mixture of dibromindigo and indigo.
3. The dye must be chemically reduced in order to bond with water, dissolve and then penetrate the wool. The mixture is pale yellow/green.
4. Wool is then dipped into the dye and exposed to the air which re-oxidizes the dye and produces the final color. If the reduced dye was not exposed to sunlight the final color is purple. If it was exposed to sunlight, the ultraviolet rays break down the molecular bond with the bromine molecules and the final color is blue.



Molecular Structure of Royal Blue - Techelet
(without the bromine)



38. Which breaks down very quickly after the snail dies.