

Daf Ditty Yoma 38: *Leptinemia pyrotechnica*



Leptadenia pyrotechnica (Hindi: खींप; Punjabi: ਖਿੱਪ) is the botanical name of a desert herb of the family Apocynaceae. It is widespread from Senegal to India. It is known as *khimp* in Hindi and Urdu, and *khipp* in Punjabi.

Being highly drought-resistant, *Leptadenia pyrotechnica* has played an important role in the desert afforestation programs. The herb *khimp* is a strong soil binder and, as such, is one of the pioneer species in sand dune fixation.

כשל זהב: מתני' ואלו לגנאי של בית גרמו לא רצו ללמד על מעשה לחם הפנים של בית אבטינס לא רצו ללמד על מעשה הקטורת הוגרם בן לוי היה יודע פרק בשר ולא רצה ללמד בן קמצר לא רצה ללמד על מעשה הכתב על הראשונים נאמר זכר צדיק לברכה ועל אלו נאמר וישם רשעים ירקב: גב' חיד * בית גרמו היו בקיאים במעשה לחם הפנים ולא רצו ללמד שלחו חכמים והביאו אומנין מאלכסנדריא של מצרים והיו יודעין לאפות כמותן ולא היו יודעין לרדות כמותן שהללו מסיקין מבתוץ ואופין מבתוץ והללו מסיקין מבפנים ואופין מבפנים הללו פיתן מתעפשת והללו אין פיתן מתעפשת כששמעו חכמים בדבר אמרו כל מה שברא הקב"ה לכבודו בראו שנאמר כל הנקרא בשמי ולכבודי בראתיו וחזרו בית גרמו למקומן שלחי להם חכמים ולא באו כפלו להם שכן ובא בכל יום היו נוטלין שנים עשר מנה והיום עשרים וארבעה * ר' יהודה אומר בכל יום עשרים וארבעה והיום ארבעים ושמונה אמרו להם חכמים מה ראיתם שלא ללמד אמרו להם יודעין היו של בית אבא שכית זה עתיד לידרב שמא ילמדו אדם שאינו מזהיגן וילך ויעבוד עבודת

2) MISHNAH: The Mishnah enumerates people or groups who are rebuked for not sharing their talents or knowledge with others.

3) The House of Garmu

A Baraisa expands on the talent of the House of Garmu and their refusal to share their knowledge of making the Lechem HaPanim.

4) The House of Avtinas

A Baraisa expands on the talent of the House of Avtinas and their refusal to share their knowledge of making the incense.

Another Baraisa cites a number of different incidents that are related to the House of Avtinas and whether they should be looked upon positively or negatively.

5) Hugas ben Levi

A Baraisa describes the musical talent of Hugas ben Levi.

6) Ben Kamtzar

A Baraisa expands upon Ben Kamtzar's refusal to share his skill at writing multiple letters at the same time

מתני' ואלו לגנאי: של בית גרמו לא רצו ללמד על מעשה לחם הפנים, של בית אבטינס לא רצו ללמד על מעשה הקטורת.

MISHNA: Apropos the mention in the mishna of people who took action in the Temple and were mentioned favorably, the mishna lists **those** who took action in the Temple and were mentioned **unfavorably**. The craftsmen of the **House of Garmu did not want to teach** the secret of the **preparation of the shewbread** and sought to keep the secret within their family. The craftsmen of the **House of Avtinas did not want to teach** the secret of the **preparation of the incense**.

הוגרס בן לוי היה יודע פָּרָק בַּשִּׁיר וְלֹא רָצָה לְלַמֵּד, בֶּן קַמְצָר לֹא
 רָצָה לְלַמֵּד עַל מַעֲשֵׂה הַכֶּתֶב. עַל הָרֵאשׁוֹנִים נֶאֱמַר: "זִכֹּר צְדִיק
 לְבִרְכָה", וְעַל אֵלוֹ נֶאֱמַר: "וְשֵׁם רְשָׁעִים יִרְקַב".

Also, **Hugras ben Levi** knew a **chapter** in the art of **music**, as will be explained, and **he did not want to teach** it to others. And the scribe **ben Kamtzar** **did not want to teach** a special **act of writing**. He was expert at writing all four letters of a four-letter name simultaneously. **About the first ones**, who were mentioned favorably, **it is stated**:

זִכֹּר צְדִיק, לְבִרְכָה; וְשֵׁם רְשָׁעִים יִרְקַב. 7 The memory of the righteous shall be for a blessing; but the name of the wicked shall rot.

Prov 10:7

"The memory of the righteous shall be for a blessing" and about these who were concerned only for themselves it is stated: *"But the name of the wicked shall rot"*

RASHI

על מעשה הכתב - קושר ד' קולמוסין בד'
 אצבעותיו וכותב שם בן ארבע אותיות כאחד:

גַּמְ' תָּנוּ רַבָּנָן: בֵּית גַּרְמוֹ הָיוּ בְּקִיָּאִין בְּמַעֲשֵׂה לֶחֶם הַפָּנִים וְלֹא רָצוּ
 לְלַמֵּד. שָׁלְחוּ חֲכָמִים וְהֵבִיאוּ אוֹמְנִין מֵאֶלְכָסְנֵדְרֵי אֶשְׁל מִצְרַיִם. וְהָיוּ
 יוֹדְעִין לְאַפּוֹת כְּמוֹתָן, וְלֹא הָיוּ יוֹדְעִין לְרִדּוֹת כְּמוֹתָן. שֶׁהָלְלוּ מְסִיקִין
 מִבְּחוּץ וְאוֹפִין מִבְּחוּץ, וְהָלְלוּ מְסִיקִין מִבְּפָנִים וְאוֹפִין מִבְּפָנִים. הָלְלוּ
 פִּיתָן מִתְּעַפְּשֵׁת, וְהָלְלוּ אֵין פִּיתָן מִתְּעַפְּשֵׁת.

GEMARA: The Sages taught in a *baraita*: The craftsmen of the House of Garmu were expert in the preparation of the shewbread, and they did not want to teach others the secret of its

production. **The Sages** dismissed them and **sent for and brought craftsmen from Alexandria in Egypt**, a large city with many experts. **And** those craftsmen **knew** how **to bake like** the members of the House of Garmu did, **but they did not know** how **to remove** the bread from the oven **like they** did.

The shewbread was baked in a complex shape, and it was difficult to place it in the oven and remove it without breaking it. The difference was **that these** Alexandrians **light** the fire **outside** the oven **and bake it outside** the oven; **and these** members of the House of Garmu **light** the fire **inside** the oven **and bake it inside**. In the case of **these** Alexandrians, **their bread becomes moldy** over the course of the week, **and** in the case of **these** members of the House of Garmu, **their bread does not become moldy**.

כְּשִׁשְׁמְעוּ חֲכָמִים בְּדָבָר, אָמְרוּ: כֹּל מֵה שֶׁבָּרָא הַקָּדוֹשׁ בְּרוּךְ הוּא
לְכָבוֹדוֹ בְּרָאוּ, שֶׁנֶּאֱמַר: "כֹּל הַנִּקְרָא בְּשִׁמִּי וְלְכָבוֹדִי בְּרָאתִיו". וְחָזְרוּ
בֵּית גְּרָמוֹ לְמִקְוָמָן. שֶׁלְּחֹ לָהֶם חֲכָמִים — וְלֹא בָאוּ, כִּפְלוּ לָהֶם
שִׁכְרָן וּבָאוּ. בְּכָל יוֹם הָיָה נוֹטְלִין שְׁנַיִם עָשָׂר מָנָה, וְהַיּוֹם עֲשָׂרִים
וְאַרְבָּעָה. רַבִּי יְהוּדָה אוֹמֵר: בְּכָל יוֹם עֲשָׂרִים וְאַרְבָּעָה, וְהַיּוֹם אַרְבָּעִים
וְשִׁמוֹנָה.

When the Sages heard of the matter that the bread of the imported craftsmen was of lower quality than before, they said: Whatever the Holy One, Blessed be He, created, He created in His honor, as it is stated:

ז כל הנקרא בשמי, ולקבודי
בראתיו: יצרתיו, אף-עשיתיו.
7 Every one that is called by My name, and whom I have
created for My glory, I have formed him, yea, I have made
him.'

Isa.43:7

“Everyone who is called by My name, I have created for My glory” In deference to God, the Sages should diminish their honor for the greater glory of God **and** let **the House of Garmu** return to their original station.

The Sages sent for them to reassume their previous position, **and they did not come**. **They doubled their wages and they came**. Each day until then they would take wages of twelve maneh, and today they take wages of twenty-four maneh. **Rabbi Yehuda says: Each day they took twenty-four maneh, and today they take forty-eight**.

אָמְרוּ לָהֶם חֲכָמִים: מָה רָאִיתֶם שְׁלֹא לְלַמֵּד? אָמְרוּ לָהֶם: יוֹדְעִין הָיוּ
 שֶׁל בֵּית אָבִא שְׁבִית זֶה עֲתִיד לִיחָרֵב, שְׁמָא יִלְמוּד אָדָם שְׁאִינוּ מְהוּגְנִין
 וַיִּלְדוּ וַיַּעֲבֹד עֲבוּדָה זָרָה בְּכָף. וְעַל דְּבַר זֶה מְזַכְּרִין אוֹתָן לְשִׁבְחָה:
 מִעוֹלָם לֹא נִמְצְאוּ פֶת נִקְיָה בְּיַד בְּנֵיהֶם, שְׁלֹא יֹאמְרוּ מִמַּעֲשֵׂה לָחֶם
 הַפָּנִים זֶה גִּיזוּגִין, לְקִיִּים מָה שֶׁנֶּאֱמַר: "וְהָיִיתֶם נְקִיִּים מֵה' וּמִיִּשְׂרָאֵל".

The Sages said to them: What did you see that led you not to teach others this craft? They said: The members of our father's house knew that this house, the Temple, is destined to be destroyed, and they were concerned lest an unworthy man learn our skill of baking and go and engage in idol worship with that skill. Therefore, they attempted to prevent this skill from spreading beyond their family. The Gemara comments: **And for this matter they are mentioned favorably: Never was refined bread of fine flour found in the hands of their descendants, so that people would not say that they are sustained from that technique of preparing the shewbread.** They ate only bread made of coarse flour mixed with bran, to fulfill that which is stated:

כב וּנְכַבְּשָׁה הָאָרֶץ לִפְנֵי יְהוָה, וְאַחַר
 תָּשׁוּבוּ--וְהָיִיתֶם נְקִיִּים מִיְהוָה,
 וּמִיִּשְׂרָאֵל; וְהָיְתָה הָאָרֶץ הַזֹּאת לְכֶם,
 לְאֶחְזָה--לִפְנֵי יְהוָה.

22 and the land be subdued before the LORD, and ye return afterward; then ye shall be clear before the LORD, and before Israel, and this land shall be unto you for a possession before the LORD.

Num 32:22

“And you shall be clear before the Lord and before Israel” Not only must one's behavior be beyond reproach, he should also make certain to be beyond suspicion.

שֶׁל בֵּית אַבְטִינָס לֹא רָצוּ לְלַמֵּד עַל מַעֲשֵׂה הַקְטוֹרֶת. תָּנוּ רַבָּנָן: בֵּית
 אַבְטִינָס הָיוּ בְקִיָּאִין בְּמַעֲשֵׂה הַקְטוֹרֶת וְלֹא רָצוּ לְלַמֵּד, שְׁלַחוּ חֲכָמִים
 וְהֵבִיאוּ אוֹמְנִין מֵאַלְכְּסַנְדְּרִיָּא שֶׁל מִצְרַיִם. וְהָיוּ יוֹדְעִין לְפִטְטֵם כְּמוֹתָם
 וְלֹא הָיוּ יוֹדְעִין לְהַעֲלוֹת עֶשֶׂן כְּמוֹתָן. שֶׁל הֵלְלוּ — מִתַּמָּר וְעוֹלָה
 כְּמִקֵּל, שֶׁל הֵלְלוּ — מִפְצִיעַ לְכָאן וּלְכָאן.

§ Similarly, the mishna related: The craftsmen of the House of Avtinas did not want to teach about the secret of the preparation of the incense, at which they were particularly adept. The Sages taught in a *baraita*: The members of the House of Avtinas were expert in the technique of preparing the incense, and they did not want to teach others. The Sages dismissed them and sent for and brought craftsmen from Alexandria in Egypt. And the Alexandrian craftsmen knew how to blend the spices like they did, but they did not know how to cause the smoke to rise like the House of Avtinas did. The smoke of the incense blended by these members of the House of Avtinas rises in a column like a stick; the smoke of the incense blended by these Alexandrians branched out to here and to there and did not rise in a straight line.

וְכִשְׁשָׁמְעוּ חֲכָמִים בְּדַבָּר, אָמְרוּ: כֹּל מֵה שֶׁבָּרָא הַקָּדוֹשׁ בְּרוּךְ הוּא
 — לְכַבּוֹדוֹ בְּרָאוּ, שֶׁנֶּאֱמַר: "כֹּל פֶּעַל ה' לְמַעֲנֵהוּ", וְחִזְרוּ בֵּית
 אַבְטִינָס לְמִקוֹמָן. שְׁלַחוּ לָהֶם חֲכָמִים וְלֹא בָּאוּ, כִּפְלוּ לָהֶם שְׂכָרָן
 וּבָאוּ. בְּכֹל יוֹם נוֹטְלִין שְׁנַיִם עָשָׂר מָנֶה, וְהַיּוֹם עָשָׂרִים וְאַרְבָּעָה.
 רַבִּי יְהוּדָה אוֹמֵר: בְּכֹל יוֹם עָשָׂרִים וְאַרְבָּעָה, וְהַיּוֹם אַרְבָּעִים וּשְׁמוֹנֶה.

When the Sages heard of the matter, they said: Whatever the Holy One, Blessed be He, created, He created in His honor, as it is stated: "God made everything for His sake" (Proverbs 16:4), and they let the House of Avtinas return to their original station. The Sages sent for the members of the House of Avtinas to reassume their previous position, and they did not come. They doubled their wages and they came. Each day until then they would take wages of twelve *maneh*, and today they take wages of twenty-four *maneh*. Rabbi Yehuda says: Each day they took twenty-four *maneh*, and today they take forty-eight.

אָמְרוּ לָהֶם חֲכָמִים: מָה רָאִיתֶם שְׁלֹא לְלַמֵּד? אָמְרוּ: יוֹדְעִין הָיוּ שֶׁל
 בֵּית אָבִא שְׁבִית זֶה עֲתִיד לִיחָרֵב, אָמְרוּ: שָׂמָא יְלַמּוּד אָדָם שְׂאִינוּ
 מְהוּגָן וְיִלְיָ וְיִעְבּוֹד עֲבוֹדָה זָרָה בְּכָף. וְעַל דְּבָר זֶה מְזַכְרִין אוֹתָן
 לְשִׁבְחָה: מֵעוֹלָם לֹא יֵצֵאת כְּלָה מְבוֹשָׁמֶת מִבֵּיתָהּ, וְכִשְׁנוֹשְׂאִין אִשָּׁה
 מִמָּקוֹם אַחֵר, מִתְּנִין עִמָּה שְׁלֹא תִתְבַּסֵּם, שְׁלֹא יֵאמְרוּ: מִמַּעֲשֵׂה
 הַקְּטוֹרֶת מִתְּבַסְּמִין, לְקַיִים מָה שֶׁנֶּאֱמַר: "וְהָיִיתֶם נְקִיִּים מֵה'
 וּמִיִּשְׂרָאֵל".

The Sages said to them: What did you see that led you not to teach others this craft? They said: The members of our father’s house knew that this house, the Temple, is destined to be destroyed, and they were concerned lest an unworthy man learn our skill of preparing incense and go and engage in idol worship with that skill. Therefore, they attempted to prevent this skill from spreading beyond their family.

The Gemara comments: **And for this matter they are mentioned favorably: Never did a perfumed bride emerge from their homes. And when they marry a woman from a different place, they stipulate with her that she will not perfume herself, so that cynics would not say that it is with the work of the incense that they perfume themselves, to fulfill that which is stated:**

<p>כב ונכבשה הארץ לפני יהוה, ואחר תשובו--והייתם נקיים מיהוה, ומישראל; והייתה הארץ הזאת לכם, לאחזה--לפני יהוה.</p>	<p>22 and the land be subdued before the LORD, and ye return afterward; then ye shall be clear before the LORD, and before Israel, and this land shall be unto you for a possession before the LORD.</p>
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Num 32:22

“And you shall be clear before the Lord and before Israel”

תָּנִיא, אָמַר רַבִּי יִשְׁמַעֵאל: פַּעַם אַחַת הָיִיתִי מְהַלֵּךְ בַּדֶּרֶךְ וּמְצֵאתִי
אֶחָד מִבְּנֵי בְנֵיהֶם, אָמַרְתִּי לוֹ: אָבוֹתַיךָ בִקְשׁוּ לְהַרְבוֹת כְּבוֹדָן וְרָצוּ
לְמַעַט כְּבוֹד הַמָּקוֹם, עַכְשָׁיו כְּבוֹד מְקוֹם בְּמִקוֹמוֹ, וּמֵיַעַט כְּבוֹדָם.

It was taught in a *baraita* that Rabbi Yishmael said: One time I was walking along the road and I found one of the descendants of the House of Avtinas. I said to him: Your fathers sought to enhance their honor and sought to diminish God's honor by not revealing their secret to others. Now, although the Temple was destroyed, the honor of God remains as it was, and He diminished their honor, as their significance stemmed from their Temple service.

אָמַר רַבִּי עֲקִיבָא: (פַּעַם אַחַת) סָח לִי רַבִּי יִשְׁמַעֵאל בֶּן לֹוּגָא: פַּעַם
אַחַת יָצֵאתִי אֲנִי וְאֶחָד מִבְּנֵי בְנֵיהֶם לְשָׂדֶה לְלַקֵּט עֵשְׂבִים, וְרָאִיתִי
(שְׁשֻׁחַק וּבְכָה). אָמַרְתִּי לוֹ: מִפְּנֵי מָה בְּכִיתָ? אָמַר לִי: כְּבוֹד אָבוֹתַי
נִזְכְּרָתִי. וּמִפְּנֵי מָה שְׁחֻקְתָּ? אָמַר לִי: שְׁעֵתִיד הַקָּדוֹשׁ בְּרוּךְ הוּא
לְהַחְזִירָה לָנוּ. וּמִפְּנֵי מָה נִזְכְּרָתָּ? אָמַר לִי: מֵעֵלָה עֵשֶׂן כְּנֻגְדִי. הֲרָאֵהוּ
לִי! אָמַר לִי: שְׁבוּעָה הִיא בְּיַדֵּינוּ שְׂאִין מֵרָאִין אוֹתוֹ לְכָל אָדָם.

Rabbi Akiva said: One time Rabbi Yishmael ben Loga related to me: One time I and one of the descendants of the House of Avtinas went out to the field to collect herbs, and I saw that he laughed and he cried. I said to him: Why did you cry? He said to me: I was reminded of the honor of my forefathers, how important they were in the Temple. I said to him: And why did you laugh? He said to me: The Holy One, Blessed be He, is going to restore it to us in the future and we will be honored again. I said to him: And why are you reminded of this now? He said to me: The smoke-raising herb is before me, here in the field, reminding me of the past. I said to him: Show it to me; which one is it? He said to me: We are bound by oath not to show it to any person other than the members of our family.

אָמַר רַבִּי יוֹחָנָן בֶּן נוּרִי: פְּעַם אַחַת מָצָאתִי זָקֵן אֶחָד וּמְגִילַת סַמְמָנִין
 בְּיָדוֹ. אָמַרְתִּי לוֹ: מֵאֵין אַתָּה? אָמַר לִי: מִבֵּית אַבְטִינָס אָנִי. וּמָה
 בְּיָדְךָ? אָמַר לִי: מְגִילַת סַמְמָנִין. הֲרָאֵהוּ לִי! אָמַר לִי: כָּל זְמַן שְׁבִית
 אָבָא הָיוּ קַיִימִין, לֹא הָיוּ מוֹסְרִין אוֹתוֹ לְכָל אָדָם, וְעַכְשָׁיו הָרִי הוּא
 לָךְ, וְהִזְהֵר בָּהּ. וְכִשְׁפָּאתִי וְסַחַתִּי דְּבַרִּי לְפָנַי רַבִּי עֶקִיבָא, אָמַר לִי:
 מֵעַתָּה אֲסוּר לְסַפֵּר בְּגִנוּתָן שֶׁל אֱלֹוִי.

Rabbi Yohanan ben Nuri said: One time I found an old man who had in his hand a scroll with the location and formula for blending of spices. I said to him: Where are you from? What is your ancestry? He said to me: I am from the House of Avtinas. I asked him: And what is in your hand? He said to me: A scroll of spices. I said to him: Show it to me. He said to me: As long as the House of Avtinas, my forefathers, was extant, they would not pass it on to anyone. And now, here it is; and be careful with it not to give it to anyone. And when I came and related my statement before Rabbi Akiva, he said to me: And now that they have surrendered the scroll to worthy recipients since they are unable to maintain its sanctity, it is prohibited to mention them unfavorably, as even their earlier reticence was apparently for the glory of God.

Summary

Rav Avrohom Adler writes:¹

And these were mentioned to their shame:

They of the house of Garmu would not teach anything about the preparation of the lechem hapanim (the showbread); they of the house of Avtinas would not teach anything about the preparation of the incense; Hugros, of the tribe of Levi, knew a special rhythm in song, but would not teach it; Ben Kamtzar would not Teach anyone his art of writing. Concerning the former, it is said: the mention of the righteous shall be for a blessing; concerning the others, it is said: but the name of the wicked shall rot.

The Gemora cites a braisa: The house of Garmu was expert in preparing the showbread, but would not teach it. The Sages sent for specialists from Alexandria of Egypt, who knew how to bake as

¹ http://dafnotes.com/wp-content/uploads/2015/11/Yoma_38.pdf

well as they, but they did not know how to remove (the loaves) down (from the oven) as well as the former, for they were heating the oven outside of it and baked from outside, whereas the latter heated the oven from inside and baked from inside (with the result) that the bread of the latter would spoil, whereas the bread of the former did not spoil. When the Sages heard that, they quoted: Everyone that is called by My name, I have created for My honor. They said: Let the house of Garmu return to their position. The Sages sent for them, but they would not come. Then they doubled their wages and they came. Until now they used to get twelve maneh for the day, from that day and on, they received twenty-four. Rabbi Yehudah said: Until then they received twenty-four maneh per day, from that day and on, they received forty-eight.

The Sages said to them: What reason did you have for refusing to teach your art? They said to them: In our father's house they knew that this Temple will be destroyed, and perhaps an unworthy man would learn it and then proceed to serve idols with it. For the following matter, their memory was praised: Never was refined bread to be found in their children's hand, lest people say, "They are being fed from the production of the showbread." They endeavored to fulfill the commandment: You shall be innocent before Hashem and before Israel.

The Mishna had stated: They of the house of Avtinas would not teach anything about the preparation of the incense.

The Gemora cites a braisa: The house of Avtinas were expert in preparing the incense, but would not teach their art. The Sages sent for specialists from Alexandria in Egypt, who knew how to compound incense as well as they, but did not know how to make the smoke ascend as well as they. The smoke of the former rose as straight as a stick, whereas the smoke of the latter was scattered in every direction.

When the Sages heard that, they quoted: Everyone that is called by My name, I have created for My honor. They said: Let the house of Avtinas return to their position. The Sages sent for them, but they would not come. Then they doubled their wages and they came. Until now they used to get twelve maneh for the day, from that day and on, they received twenty-four.

Rabbi Yehudah said: Until then they received twenty-four maneh per day, from that day and on, they received forty-eight. The Sages said to them: What reason did you have for refusing to teach your art? They said to them: In our father's house they knew that this Temple will be destroyed, and perhaps an unworthy man would learn it and then proceed to serve idols with it. For the following matter, their memory was praised: Never did a bride of their house go out perfumed, and when they married a woman from elsewhere, they expressly forbade her to do so, lest people say, "They are perfuming themselves from the production of the incense." They endeavored to fulfill the commandment: You shall be innocent before Hashem and before Israel.

The Gemora cites a braisa: Rabbi Yishmael said: Once I was walking on the way and I came upon one of their descendants, and I said to him: Your forefathers sought to increase their honor and to reduce the honor of the Omnipresent; now the honor of the Omnipresent is at its place, and He has reduced their honor.

Rabbi Akiva said: Rabbi Yishmael ben Loga related to me: One day I and one of their descendants went to the field to gather herbs and I saw him crying and laughing. I said to him: Why did you cry? He answered: I recalled the glory of my forefathers. And why did you laugh? He replied: It is because the Holy One, blessed be He, will restore it to us. I asked him: And what caused you to remember? He said: There is the herb that causes the smoke to raise straight up before me. I said: Show it to me! He said to me: We are bound by an oath not to show it to any person.

Rabbi Yochanan ben Nuri said: Once I came upon an old man, who had a scroll (containing the names) of spices in his hand. I asked him: Where are you from? He said: I come from the house of Avtinas. I asked him: What do you have in your hand? He replied: It is a scroll of spices. I said: Show it to me! He said: As long as members of my father's house was alive they would not hand it over to anyone, but now, here it is, but be very careful about it.

When I came and told this to Rabbi Akiva, he said: From here and on, it is forbidden to speak of them in dispraise. Referring to this, Ben Azzai said: By your name you will be called, and to your place you will be restored, and from what belongs to you, you will be given. No man can touch what is prepared for his fellow, and one kingdom does not interfere with the other - even to the extent of one hairsbreadth.

The Gemora cites a braisa: When Hurgos tuned his voice with sweetness, he would put his thumb into his mouth and place his finger between the two parts of his mustache, so that his brethren, the Kohanim, staggered backward all at once.

The Gemora cites a braisa: Ben Kamtzar would not teach anything about (his art of) writing. It was said about him that he would take four pens between his fingers, and if there was a word of four letters, he would write it at one time. They said to him: What reason do you have for refusing to teach it? All of them found an answer for their matter (attitude). Ben Kamtzar could not find one. Concerning the first ones, it is said: the mention of the righteous shall be for a blessing; concerning Ben Kamtzar and the others, it is said: but the name of the wicked shall rot.

What is the meaning of: But the name of the wicked shall rot? Rabbi Elozar said: Rust enters their names, which means that we do not use their names. Ravina asks from a braisa: The story of Doeg ben Yosef whom his father left him with his mother when he was a young child: Every day his mother would measure him by handbreadths and would give his weight in gold to the Temple. And when the enemy prevailed, she slaughtered him and ate him, and concerning her Yirmiyah lamented: Shall the women eat their offspring, their babes that are handled in the hands? The Divine Spirit replied: Shall the Kohen and the prophet be slain in the Sanctuary of Hashem? [We see a boy named Doeg, even though there was a wicked person with that name!?]

The Gemora answers: See what happened to him! Rabbi Elozar said: The righteous man is remembered by his own (good deeds); the wicked (also) by those of his fellow. Proof that the righteous is remembered by his own (good deeds), for it is written: the mention of the righteous shall be for a blessing. The wicked is remembered also by his fellow's wickedness, for it is written: but the name of the wicked (in plural) shall rot. Ravina said to one of the Rabbis who expounded Aggada before him: From where is this statement, which the Rabbis mention: The mention of the righteous shall be for a blessing? He replied: It is a Scriptural verse: the mention of the righteous

shall be for a blessing. Ravina persisted: From where, in the Torah, may that teaching be derived? He answered: It is from that which is written: And God said: Shall I hide from Avraham that which I am doing? And it is (there) also written (after his name was mentioned): And Avraham shall surely become a great and mighty nation.

Rav Mordechai Kornfeld writes:²

The Gemara relates that the Chachamim once commissioned a group from Alexandria to prepare the Ketores in place of the artisans of Beis Avtinas. The Alexandrians did not know what ingredient causes the smoke of the Ketores to rise straight up, and the smoke of their Ketores rose and dispersed. The Chachamim decided that since the smoke of the Ketores made by Beis Avtinas rose straight up and was much more beautiful, it must be that their knowledge was a gift from Hashem, and therefore they asked Beis Avtinas to return to make the Ketores.

HAGAHOS HA'BACH asks why the Gemara says that the Chachamim re-commissioned Beis Avtinas only because of the beauty of the smoke of their Ketores. The Ma'aleh Ashan is one of the essential ingredients of the Ketores. If one omits the Ma'aleh Ashan from the Ketores which is brought in the Kodesh ha'Kodashim, the Ketores is invalid and the one who made it is Chayav Misah. That should have been the reason why the Chachamim re-commissioned Beis Avtinas, and not merely because the smoke of their Ketores was more beautiful.

TOSFOS YESHANIM (DH Hachi Garsinan) and the **TOSFOS HA'ROSH** answer that anything that causes smoke to rise and is called "Ma'aleh Ashan" is valid for use in the Ketores. As long as it has the name "Ma'aleh Ashan" it is valid, even though it is a different species and does not cause the smoke to rise straight up. The Alexandrians used a Ma'aleh Ashan in their Ketores, but it did not cause the smoke to rise straight up. (A similar answer is given by the **SHA'AR EFRAIM** #16.)

REBBI ELAZAR LANDAU explains that there is a general species of Ma'aleh Ashan which was well known and which had a number of sub-species. The Alexandrians knew about only one sub-species which worked to make the smoke rise straight up but not as well as other sub-species.

BEIS YOSEF (OC 133) writes that the Ma'aleh Ashan differs from the other main ingredients of the Ketores. Since it is included only in order to make the smoke rise and not to add to the aroma, the Ketores is valid, even l'Chatchilah, if it is omitted. He proves this from the Gemara here which says that the Chachamim re-commissioned Beis Avtinas merely because the smoke of the Ketores of the Alexandrians was not as beautiful, but not because their Ketores was invalid altogether.

However, the **BE'ER SHEVA** (Kerisus 6a) strongly rejects the assertion of the Beis Yosef. He cites the Gemara later (53a), the Yerushalmi (Yoma 1:1), and the Rambam (Hilchos Avodas Yom ha'Kipurim 5:25) who explicitly state that one is Chayav Misah for omitting the Ma'aleh Ashan from the Ketores used on Yom Kippur. The **MISHNEH L'MELECH** (Hilchos Klei ha'Mikdash 2:3) answers that the Beis Yosef distinguishes between the Ketores of Yom Kippur, of which the verse states that its smoke must rise, and the daily Ketores of the Heichal. The Mishneh l'Melech cites support for this answer from the words of the Rambam in Hilchos Klei ha'Mikdash (2:8).

² <https://www.dafyomi.co.il/yoma/insites/yo-dt-038.htm>

MAHARATZ CHAYOS writes that one is Chayav Misah for omitting the Ma'aleh Ashan only if he has Ma'aleh Ashan and leaves it out. If he does not have it all, he is not Chayav Misah for omitting it.

BEN KAMTZAR'S TALENT

The Mishnah relates that Ben Kamtzar was able to write four letters with one hand simultaneously by placing four quills between his fingers. In this way he wrote the four letters of the Name of Hashem at one time.

What was so great about this feat? The letters of the Name of Hashem must be written in successive order. They may not be written in the wrong order, and presumably they also may not be written all at one time.

TESHUVOS MAS'AS BINYAMIN (Rav Binyamin Aharon Selnik of Krakow, 1633) writes that the Gemara here provides proof that printing or stamping the Name of Hashem in such a way that all of the letters are written at one time is not considered writing the letters of the Shem Hashem out of order. Only writing them backwards is considered out of order. Therefore, he concludes that the use of a printing press to write a Sefer Torah is permitted, provided that one verbally is Mekadesh the Shem (by saying, "I'Shem Kedushas ha'Shem") before he imprints it on the parchment with the press. In addition, he rules that printed Sefarim have the same Kedushah as a Sefer Torah. (The Halachah does not follow his opinion.)

(See **MAHARATZ CHAYOS**, who suggests that Ben Kamtzar developed some sort of rudimentary printing press which enabled him to write many letters at one time.)

Those criticized for refusing to share their craft

Steinzaltz (OBM) writes:³

Following the previous Mishna (37a) that complimented the people whose contributions to the Temple enhanced its service, the Mishna on *our daf* lists individuals whose behavior was criticized by the Sages. Among them are two families of *kohanim* – Bet Garmu, who were responsible for baking the *lehem ha-panim* (shewbread) and Bet Avtinas, who were responsible for the *ketoret*. The condemnation of both of these families focused on their refusal to share the knowledge of their craft with others.

The Gemara on our daf relates that in each case the Sages removed them from their positions and brought in experts from Alexandria in Egypt who were to teach how to do these things. In each case the experts could not create the same effect as the priestly families – they could not bake bread that would not become moldy, nor could they succeed in creating an incense whose smoke

³ <https://steinsaltz.org/daf/yoma38/>

would rise in a straight line to the heavens – and the Sages eventually had to return them to their original positions – with a significant raise in their salaries.

In their defense, the baraita records their explanation for their behavior:

They said: The members of our father's house knew that this house, the Temple, is destined to be destroyed, and they were concerned lest an unworthy man learn our skill of baking and go and engage in idol worship with that skill. Therefore, they attempted to prevent this skill from spreading beyond their family.

Rabbi Akiva records the story told to him by Rabbi Yishmael ben Loga, who once was picking herbs with the descendant of the Avtinas family, who began to cry and to laugh. He explained that he had seen the plant that was used to make the *ketoret* rise directly upwards, which reminded him of the loss of his family's prestige but encouraged him to believe that it would be returned one day in the future. When asked to point it out, he refused saying that the family had sworn never to reveal the secret to others.



Smoke raising herb, known today as leptadenia pyrotechnica.

The plant seen by the descendant of Bet Avtinah is referred to as *ma'aleh ashan*. Although the tradition identifying this plant has apparently been lost over the centuries, the generally accepted identification is with a weed called *leptadenia pyrotechnica*, a plant that grows in the southern part of the Jordan Valley and in the northern Sinai.

This plant ignites very easily, and local Arabs have used it to make gunpowder and explosives. Lighting even one branch of the bush will cause it to burn up entirely in a very short amount of time, with flames reaching as high as ten meters.

The disgrace of Beis Avtinah ואלו לגנאי... של בית אבטינס

Rav Shalom Shwadron, zt"l, explains that although the intention of Beis Avtinah seemed to be for the sake of heaven, the Mishnah does not reflect this.⁴

If they truly intended to withhold the secret of the קטורה in order to keep it from being defiled by idolatry, why was it held against them?

Only because they did not consult the Sages of their time before they made their decision. They were not submissive to the Sages of their generation, and they acted upon their own understanding and initiative. This is what places them in the category of the wicked.

The Alter from Kelem, zt"l, once mentioned the pivotal importance of this characteristic of deference. "When one goes to learn, there is a very important preparatory step that many skip without realizing it. Every day, before beginning the day's seder, one must bless the One who "chose them and their teachings." Why? Because the Mishnah states clearly that one of the forty-eight traits through which Torah is acquired is "faith in the Sages."

The Midrash Shmuel explains that we must believe that everything that Chazal stated is of the same status as that which was transmitted at Har Sinai. This is an avodah of its own that precedes the actual learning and acquisition of understanding. And it is just this quality that completes one's Torah education. Even when we do not completely understand, we must be prepared to accept what the Rav says unconditionally."

Someone once asked the Chazon Ish, zt"l, "What is the path to emunas chachamim?"

The Chazon Ish explained: "The knowledge that there is no true Torah that isn't revealed through the soul of a living Sage!"

⁴ <https://dafdigest.org/masechtos/Yoma%20038.pdf>

What a Loser



Rabbi Jay Kelman writes:⁵

"And [we remember] these for degradation: those of Beit Garmu did not want to teach on the matter of the *lechem hapanim*; those of Beit Avtinus did not want to teach on the matter of the *ketoret*" (Yoma 38a).

Each week, twelve loaves of bread were baked and placed on the *shulchan*, the table, situated just outside the Holy of Holies. It was divided up a week later between the members of the *mishmar*, the group, of *kohanim* who were starting and finishing their weekly work cycle. Apparently, the baking of such required special workmanship. Beit Garmu refused to share their know-how with others and the rabbis fired them, bringing expert bakers from Alexandria, Egypt, to replace them. Unfortunately, "they knew how to bake like them, but they did not know how to remove it from the oven like them".

Hearing about the poorer quality of the replacement workers, the Sages--invoking the verse, "all that is created is for My name and glory"--sent for Beit Garmu to return to their post. Realizing their bargaining power had greatly increased, they refused to do so unless their wages were doubled. In explaining why, they refused to teach others, they responded that they had a family tradition that "this house is destined to be destroyed; perhaps someone who is not worthy will learn and use the bread for idol worship". A nice argument but not necessarily persuasive.

⁵ <https://torahinmotion.org/profile/rabbi-jay-kelman-cpa-ca>

When Hizkiyahu told Isaiah that he did not have children as he foresaw that he would have wicked descendants, Isaiah rebuked him: "In these hidden Divine matters, why do you involve yourself?" (Brachot 10a). Our task is to do what we must do and not worry what may happen long after we are gone. There are so many factors that can change the course of history, including our own righteousness. And even if history is not changed--and Hizkiyahu did beget Menashe, the most wicked of kings ever to rule (and he had lots of competition)--that is not our concern.

Interestingly, the rabbis' response was to find something positive to say about Beit Garmu, even if they were upset by their uncooperative behavior. "And for this thing they are to be praised; that clean bread was never found in the hands of their children, lest one say, from the *lechem hapanim* do they benefit, to fulfill what the verse says, 'and you shall be clean from G-d and Israel'" (Bamidbar 32:22). This verse is the source of *ma'arit ayin*, where we must worry not only that we do no wrong, but that we are not perceived to be doing wrong. And this fear is greatly compounded for those who work in the public service. Beit Garmu may have been wrong, but at least no one could accuse them of using their work to derive personal benefit.

The Gemara has an almost identical explanation regarding Beit Avtinus: they refused to teach the method for the *ketoret*, the eleven spices offered daily. Again, they were fired, their replacements from Alexandria were not up to the task, and Beit Avtinus demanded a doubling of their salary to return. They, too, explained that they were afraid that, after the destruction of the Temple, some would improperly continue to make the *ketoret*. In order to avert any question of personal benefit, Beit Avtinus ensured "that no bride ever left their house perfumed, and when they married a woman from a different place, they would make a condition that she should not wear perfume".

Two more people came in for censure for their unwillingness to share their knowledge with others: Hugras ben Levi, who knew how to make beautiful sounds (likely some form of a *cappella*); and Ben Kamzar, who mastered the technique of writing with four quills simultaneously.

Some had better excuses than others, and the rabbis went so far as to apply the verse, "the name of wicked shall rot" to the family of ben Kamzar, "who had no answer for their actions". Interestingly, while Hugras ben Levi escaped such censure, as they had "an answer for their actions", the Gemara never says what it was. Presumably, it was less acceptable than those of Beit Garmu and Avtinus.

Whatever excuses one may have, our tradition demands that we share our knowledge--especially that of a religious nature--with others. Rav Soloveitchik would take great pride in being called a *melamed*, as such is the great manifestation of our Divine image: G-d is *melamed Torah leamo Yisrael*. Three times a day, we say, "You grace humanity with knowledge". When we grace humanity with the knowledge that we have acquired, we are following in the path of the Divine.

The Lesson of the House of Avtinus

Rav Frand writes:⁶

Parshas Ki Sisa includes the mitzvah of *Ketores* [Incense]. The *Ketores* was offered twice a day on the Golden *Mizbayach* [Altar] situated in front of the *Kodesh Hakadashim* [Holy of Holies]. *Klal Yisrael* enjoyed tremendous benefits by virtue of offering the *Ketores*. The *Ketores* was made up of various plants, spices, and herbs which provided a pleasant aroma to the *Beis HaMikdash*.

The Mishna [Yoma 3:11] lists certain families in less than a positive light (*v'elu l'gnai*), one of which was The House of Avtinas (*Beis Avtinas*). The House of Avtinas was in charge of producing the *Ketores* for the *Beis HaMikdash*. However, they refused to teach anyone else the “trade secrets” involved in producing the *Ketores*. For this reason the Mishna mentions them (together with certain other families and individuals) in a negative fashion.

The Chofetz Chaim writes, based on this Mishna (in his sefer *Shmiras HaLashon*): If *Beis Din* [the Jewish Court] instructs someone to do something and he ignores their instruction, it is permissible to speak negatively about him (e.g. — that he has disobeyed *Beis Din*). He cites the Mishna as precedent for the fact that a person may record someone’s evil practices in writing in the annals of the city even if that will preserve the information for all eternity.

Our daf says that the *Chachomim* tried to undercut the House of Avtinas. They brought in specialists from Alexandria in Egypt who were expert in mixing spices and herbs. They wanted to put the House of Avtinas out of business for refusing to comply with the order of the court to share their recipe for the *Ketores*. (Instead of “outsourcing” the job of making the *Ketores*, the *Chachomim* tried to “insource” the operation by bringing in competing artisans.)

The Gemara says that the Alexandrian experts were able to make a mixture that duplicated the aroma of the *Ketores*, however they did not know how to make the smoke of the burning incense rise up in a straight column as was the tradition of the *Ketores* of the House of Avtinas. The smoke from the Alexandrian *Ketores* dissipated and filled the entire *Heichal* of the *Beis HaMikdash*, rather than rising up straight as a rod.

The *Chachomim* went back to the House of Avtinas and again demanded that they reveal the secret ingredient that made the smoke go up straight. Again, they refused and kept the secret to themselves. The Gemara says the *Chachomim* concluded, “Whatever the Holy Blessed Be He has created, He has created for His Honor as it is written ‘All the actions of Hashem are for Him’ [Mishlei 16:4]” [Yoma 38a].

Rabbeinu Chananel interprets “G-d has taken action by giving extra wisdom to this one more than to this one for His sake so that His work will be accomplished by the one He wants to accomplish it.” G-d gave the House of Avtinas the secret of how to do this and we can infer that He wants them to do it and no one else. Sometimes G-d gives individuals certain knowledge or talents to accomplish something and this is because He wants specifically them to be able to accomplish the task.

The *Chachomim* had no choice but to rehire the Family of Avtinas to be in charge of the *Ketores* manufacture. The Talmud relates that the *Chachomim* sent them a message (wanting to tell them that they had their job back), but they refused to come. The Gemara says the *Chachomim* had to double their salary before they would take their job back. Originally, they were paid 12 maneh a day and now they received 24 maneh a day.

When they finally came back (at the higher wage), the *Chachomim* asked them, “Why did you refuse to teach others how to do this?” They answered “We have a tradition that the *Beis HaMikdash* is destined to be destroyed. We are afraid that this information will fall into the hands of inappropriate people who will make such a *Ketores* to serve idols. That is why we keep the secret in our family.”

⁶ <https://torah.org/torah-portion/ravfrand-5777-ki-sisa/>

The Maharsha writes that the *Chachomim* did not believe this answer. They felt that the only reason the family was refusing to reveal their knowledge was to keep the monopoly on the *Ketores*. They had a cartel that they did not want to lose. For this reason, the Mishna listed them among the families who deserved condemnation and based on this the Chofetz Chaim wrote that we are allowed to publicly condemn people who disobey *Beis Din* — even if they have an excuse for doing so — if *Beis Din* feels their excuse is self-serving and insincere.

The Gemara then discusses other details about the House of Avtinas. At the end of the discussion, the Gemara relates the following: “From here (this incident with *Beis Avtinas*) Ben Azai said ‘*B’Shimcha Yikra-oocha u’bimkomcha yosheevucha*’ (by your name you will be called and in your place you will be seated)”. Rashi interprets this to mean: A person should not worry and say “so and so is taking away my livelihood” for regardless you will be called back and returned to your proper station.” In other words, everyone will ultimately receive the income and the property to which he is entitled. No one can take away his neighbor’s livelihood (against the Will of G-d).

Rav Pam writes in his sefer that we see a very important thing from this Gemara. If based on Jewish law, a person may open up a competing business [without infringing on the *halachos* of ‘hasagas gevul’ (encroaching on the territory of one’s neighbor)] then the original business owner does not need to worry that the second business will negatively affect his own. A person’s income is predetermined from the beginning of one year until the beginning of the next year. What is yours is yours and what is his is his.

Just like the *Chachomim* could not break the monopoly of *Beis Avtinas* because they were destined from Heaven to have that job and that income, so too no one’s livelihood can be affected adversely as long as the other competitor is acting within the guidelines of Jewish law. (If he is acting outside the parameters of Jewish law, then there is legal recourse through the Jewish Court system.)

Several months ago, there was a person in town who owned a certain type of business. He heard that there was a competing type of business that was going to open. He and another owner of a similar business had a meeting. He suggested that they should collude to drop the prices on a certain product that this other business was going to feature, such that the new fellow would not even be able to get his new venture off the ground. The plan was to put him out of business before he even started.

The person who was contemplating this scheme asked me whether he should do this and I told him that he should not. If the newcomer *al pi din* [according to Jewish law] has a right to open a new business (and he did have that right) then you need to realize that whatever is going to be yours is yours and whatever is going to be his is going to be his. This is what we see from the Gemara of *Beis Avtinas*.

Kol Poel Hashem L’Ma’aneyhu [all of Hashem’s actions are for His sake]. The Almighty wanted the House of Avtinas to have the exclusive right to make the *Ketores*, for whatever the reason might be, so nothing is going to affect that. Not only that, but they wound up charging double — which the Gemara did not like — but nevertheless Ben Azzai is telling us that no one can take away his neighbor’s livelihood against the Will of G-d. In the course of our lives, this comes up so often. “If this person does this, it will put me out of business...” Do not worry! “*B’Shimcha Yikra-oocha u’bimkomcha yosheevucha*.” What is destined to be yours will always remain yours.



*Demonstration of lechem hapanim and Temple storage.
(Credit: Eliana Rudee/Breaking Israel News)*

Lechem Ha'Panim and Churban Bayit Sheini

Eliezer Meir Sidel writes:⁷

Machon Lechem HaPanim, Israel

In the Mishnah (Shekalim 5:1) it lists 15 “memunim” (appointees) who were in charge of the various activities of the Beit HaMikdash during the period of Bayit Sheini. Thirteen of those listed were individuals and the remaining two were families, Beit Garmu, in charge of the lechem ha’panim, and Beit Avtinas, in charge of the ketoret.

It is uncertain whether the family’s name is pronounced Garmu; the Hebrew גרמו could just as well be Garmo, Gramu, Gramo, or Gremu. It has become accepted to pronounce it as Beit Garmu.

⁷ <http://www.5tjt.com/lechem-hapanim-and-churban-bayit-sheini/>

Professor Zohar Amar, dean of Land of Israel Studies, Bar-Ilan University, has a theory that the name is derived from the Latin word “gremium” which means “p’nim” or “inner.”

Beit Garmu was a family of Levi'im descended from Kehat ben Levi. The family of Kehat was allotted the task of carrying the Shulchan (amongst other things) in the Midbar (Bamidbar 4:7). Their involvement also extended to actually baking the lechem ha'panim (Divrei HaYamim I, 9:32). The Garmu family inherited the intricate art of baking this special bread from their ancestors, passed down orally from generation to generation. As we will soon see, it was not only their exceptional expertise as bakers that landed them the job — it was also their elevated level of ruchniyut and devotion to HKB'H and Am Yisrael.

Beit Garmu consisted of phenomenal bakers. In Pirkei Avot (5:5) it lists ten miracles that occurred in the Beit HaMikdash, one of which was that “never was there found a p'sul in the lechem ha'panim.” The lechem ha'panim were extremely complex in all aspects of their preparation: mixing the ingredients, shaping the intricate shapes, timing of the baking, removal from the oven and post-bake handling. As a professional, artisan baker for over four decades, I can personally attest to the fact that to be able to churn out 12 complicated loaves such as these, week after week for hundreds of years, and never have even the minutest flaw, is unprecedented and obviously miraculous. To be worthy of such a miracle, Beit Garmu had to be exceptional bakers, able to make maximum hishtadlut, and also great tzaddikim.

Together with the other appointees, the Garmu family was paid a salary for their work from the terumat ha'lishkah, the kupah of the machatzit ha'shekel donated by Am Yisrael for the running of the Beit HaMikdash. Although they basically worked one day a week (the lechem ha'panim were baked every erev Shabbat, unless it was a yom tov, in which case it would be on erev yom tov), their remuneration was substantial. We learn from a Gemara (Yoma 38a) that they received a daily wage of 12 maneh (chachamim) or 24 maneh (R' Yehuda). A maneh is equal to 100 silver (Roman) dinars. Just to give you an idea of the value of that salary, a liter of (regular)

wine during that period cost $\frac{1}{4}$ dinar. With their weekly salary, the Garmus could purchase 4,800 liters of wine (9,600 according to R' Yehuda). Their annual salary was 52 weeks X 1,200 = 62,400 dinars (124,800 according to R' Yehuda). It is recorded that King Herod, a multi-billionaire, collected approximately 1 million dinars in tax revenue from the entire population annually. Beit Garmu's salary was about 6.5% of that (13% according to R' Yehuda). It is not known how many souls that supported, but by all counts it is an astronomical salary for only one day's work a week!

One might think, l'ch'ora, that trying to reduce public expenditure was the primary motivation of the chachamim in the famous story in the Gemara (Yoma 38a) when they tried to replace Beit Garmu. The Gemara lists two families and two individuals (quoting Mishnah Yoma 3:11) in a derogatory context. The first is "Of Beit Garmu who were unwilling to teach about the making of the lechem ha'panim."

This secret, handed down through the generations, was zealously guarded by the Garmu family and they would not reveal it to anyone, including the poskei ha'dor, the chachamim.

The chachamim obviously found this unacceptable, and when Beit Garmu refused to budge, they tried to replace them by importing expert Egyptian (non-Jewish) bakers from Alexandria to bake the lechem ha'panim. As the story goes in the Gemara, these Alexandrian bakers failed miserably and could not duplicate the quality of Beit Garmu. The lechem ha'panim needed to remain fresh the entire week while it was on the Shulchan from Shabbat to Shabbat, and the attempts by the Alexandrian bakers went moldy after a few short days.

These Alexandrian bakers were regarded as world experts in baking at the time, like the French are today, and if they could not succeed, nobody could. The chachamim had no choice but to humbly go back to Beit Garmu and re-hire them, in addition to having to agree to double their wages!

The whole story in Yoma is a little strange, and in order to fully understand it we need to fill in some gaps.

Firstly, money was never an issue here. Nowhere in the Mishnah or the Gemara do the chachamim even mention money. The only mention of money is when the chachamim agreed to double Beit Garmu's salary at the end of the story.

Neither was monopoly an issue. At no point did the chachamim object to Beit Garmu having a monopoly on the lechem ha'panim. The language of the Mishnah is interesting. It begins in a peculiar way "Of Beit Garmu, של בית גרמו." This seems to imply that the chachamim are admitting and acknowledging that Beit Garmu has some kind of kinyan (proprietary rights) to the lechem ha'panim franchise.

The only gripe the chachamim had with Beit Garmu is that they were a "secret society" and would not reveal (or even record) the method of how the lechem ha'panim were made. They feared that if Beit Garmu would not reveal the secret to them so it could be recorded for posterity, it would be lost. Their fears were indeed confirmed when Bayit Sheini was destroyed. Unlike the family in charge of the ketoret (Beit Avtinas, mentioned in the same Mishnah in Yoma), who eventually did reveal their secret and it was recorded in Masechet Keritut 6a – Pitum HaKetoret, the secret of the lechem ha'panim was lost.

It appears the chachamim initially suspected Beit Garmu's motivation behind not revealing their secret and therefore tried to replace them. Only when there was clear Divine intervention and the Alexandrian bakers failed were the chachamim's suspicions allayed. It is reminiscent of another Mishnah in Yoma recounting the preparations of the kohen gadol for avodat Yom Kippur, that the chachamim were "porshim v'bochim," as was the kohen gadol — the chachamim cried because they unjustifiably suspected the kohen gadol for being unworthy and the kohen gadol cried because they suspected him unjustly.

When the Alexandrian bakers failed, the chachamim admitted “Kol mah she’bara HKB’H lichvodo bara,” that everything HKB’H created was for His own glory. They were admitting that Beit Garmu was a supernatural phenomenon. To publicly publicize their error of suspecting Beit Garmu’s scruples, they doubled their salary, even though it was already astronomical. To the chachamim it was fitting that the family in charge of making the lechem ha’panim, which symbolized material wealth, should themselves have vast material wealth.

The Gemara goes on to reveal what great tzaddikim Beit Garmu comprised. They would never allow any of their family members to eat bread made with clean “solet” flour, so that no one would ever suspect them of using the solet from the Beit HaMikdash for their own private use. They were super-makpid with mar’it ayin and being “neki’im b’einei Elokim v’adam.”

After the episode with the failure of the Alexandrian bakers, Beit Garmu revealed why they would not divulge their secret of the lechem ha’panim. They explained they had a tradition from their ancestors that Bayit Sheini was about to be destroyed and they did not want the secret of the lechem ha’panim to fall into the wrong hands and be used for nefarious purposes of avodah zarah, chas v’shalom.

Why, then, did they not simply tell the chachamim this at the outset and prevent the whole misunderstanding? If they had, there was a slim chance that the chachamim may still have suspected their motives, but after a clear sign from Above, when the Alexandrian bakers failed, there could be no doubt. Perhaps because they were from the family of Kehat, they were traumatized by one of their ancestors, Korach, and learned the lesson that only Divine intervention (Aharon’s staff flowering) could finally put any suspicion to rest, and they therefore resorted to this path of action.

The end of this story in the Mishnah is that the chachamim, in reference to Beit Garmu (and Beit Avtinas), concluded with “zecher tzaddik l’vrachah,” exonerating them from all suspicion and confirming their elevated spiritual status.

Another “sad” conclusion of the story is that the secret of the lechem ha’panim was indeed lost with Churban Bayit Sheini. Obviously, HKB’H intended it to be so. Perhaps the reason was because Beit Garmu were such big tzaddikim that HKB’H wanted to protect them and not make them “accessories” to avodah zarah.

It is interesting that another individual mentioned in that Mishnah in Yoma, Hugas ben Levi, another of the 15 appointees mentioned above who was in charge of the Levi’im choir singers, would also not reveal their secret training methods and vocal skills to the chachamim (in his case it was for selfish reasons). Historically, it appears that he did not merit the same Divine protection by association because it is very likely that early Christianity copied their music and liturgy from the Beit HaMikdash and have been using it for avodah zarah ever since.

Beit Avtinas were coupled by the chachamim with Beit Garmu in the category of tzaddikim, and even though they revealed the secret of the ketoret, it merited the same Divine protection from any link to avodah zarah, like the lechem ha’panim, because they, too, were tzaddikim. Perhaps HKB’H intended that the secret of the ketoret be revealed because over the centuries it has been a kind of a “secret weapon” and used numerous times by Am Yisrael against a mageifah (plague).

In my many years of researching and trying to reproduce the lechem ha’panim in our institute, with the full arsenal of modern science and technology at our disposal, we still have not managed to achieve the results of Beit Garmu from over 2,000 years ago (although we have had many breakthroughs and have made much progress). This attests to the incredible, unsurpassed

professional skill and knowledge Beit Garmu possessed, and, more than that, the great level of kedushah they had by which they merited nissim geluyim.

DID VENDYL JONES DISCOVER THE TEMPLE KETORET INCENSE COMPOUND?

Rabbi Ori Bergman writes:⁸

"In April 1992, Vendyl Jones and his team discovered 600 kilos of "reddish-brown organic substance" in a carefully sealed rock silo in another part of the Qumran cave complex.

Subsequent analysis determined that this substance contained traces of at least eight of the eleven spices that were used in the manufacture of the *ketoret*.

In 1994, the incense spices were presented to the now late Rav Yehudah Getz, late Chief Rabbi of the Western Wall and Holy Places in Israel.

A sample was also given to Hakham Ovadiah Yosef. Hakham Ovadiah had his own chemist analyze the mixture to confirm its organic nature.

Then both Hakhamim requested that Vendyl Jones "burn" some of the incense for scientific purposes (not with fire but with hydrochloric acid). At their suggestion, he had the spices combined together with the *sodom* salt and *karshina* lye that was also found stored separately in the cave in Qumran.

The results were astonishing according to all accounts. Although the spices had lost some of their potency over the two millennia since their burial, it was still powerful. The residue of its fragrance lingered in the vicinity for several days following the experiment. Several people present reported that their hair and clothing retained the aroma.

One account of the incident states: *'The aroma released from the spice compound during its processing was profuse and almost immediate. It initially saturated my hands as well as the clothes that I was wearing. Within a matter of minutes my laboratory and the surrounding area (for an area of several meters) was affected by the scent released from the spices... On the first day of processing, the aroma was so intense that I could almost taste it... Upon my return home that evening, the scent that had attached itself on my body and clothes was really apparent to both my wife and daughter. During the course of the week, the odor lessened slightly but was still noticeable in and around my lab. Within a few weeks the distinct aroma of the spices diminished to a freshness or cleanness of the air in my lab and the surrounding area. This aroma was in evidence, if even so slightly, for approximately two months.'*"

⁸ <https://templeinstitute.org/temple-incense-part-5/>

Is this proof that Vendyl Jones discovered a remnant of the Temple incense?

Not necessarily. Professor Zohar Amar, of Bar Ilan University, who is an expert in any number of Temple related disciplines, (identifying the incense components, dying fabrics with *techelet*, *argaman* and *tola'at sheni*, the type of timber used in that altar fires, the baking of the showbread loaves, etc.) is highly skeptical of Vendyl Jones' claim that he discovered the Temple incense.

In an in-depth article, titled "The Ash And The Red Material From Qumran" Professor Amar begins by criticizing the sub-standard quality of Vendyl Jones' Qumran excavation, which he describes as making it "hard for us to analyze the finding independently". Organic testing of Vendyl Jones' performed by Rabbi-Dr. Marvin Antelman and Dr. Teny Hutter finds showed evidence of eight different elements which could be identified with ingredients used in the *Ketoret* incense. Two of the organic substances identified were Sodom Salt and Karshina lye, two elements used in the *Ketoret* but also found in a wide number of ancient products manufactured in the area. Following much criticism of Jones and his fellow researcher's methodology and conclusions, Professor Amar adds the following:

"Jones proposed that the cave served as a storehouse for the Temple incense and apparently belonged to the Avtinas family. This is a strange hypothesis, for why would Qumran have been selected of all places for this purpose? Insofar as we know, the Avtinas family lived in a special office in the Temple, which was known as 'the upper chamber of the House of Avtinas.' Moreover, we have proof positive that at that period the Temple incense was stored in the city of Jerusalem itself. Yosef Ben-Matityahu (Josephus) recounts that when Titus laid siege to Jerusalem, the guard of the Temple Treasury revealed to him the location where the Temple incense was stored and where there was much Cinnamon and Cassia [War 6:390]."

Professor Amar then proposes an alternative explanation of what Vendyl Jones discovered in the Qumran cave:

"The writer of this article suggests that the structure of the silo served for the storage of "borit" (lye) and might have been part of an industrial complex devoted to the extraction of "borit" and thus bears no connection to the "Pitum ha-Qetoret [Temple Incense]."

Amar proceeds to describe in detail local industries which 2000 years ago were using *Borit Karshina*, Sodom Salt and other organic materials in the production of an array of products. *Borit Karshina*, which is a type of lye was used as an agent in many different cleaning products, including soaps. Many of these soaps were scented in order to make them more pleasant to use. One of the ingredients used in perfuming ancient soaps was frankincense, also one of the elements used in the Temple Incense. This could explain the intense aroma that was released when Vendyl Jones' find was burned. Professor Amar suggests that the Essene community, which was living in the Qumran caves, and which practiced very strict rules of purity and hygiene, would likely be producers of soaps whose contents would closely resemble the contents incorporated in the Temple Incense. Professor Amar concludes this to be the more likely explanation of Vendyl Jones' discovery.⁹

⁹ The above synopsis of Zohar Amar's article, in its brevity, does not do justice to his critique or research. The entire article can be found [here](#).



Star shaped flowers of *Leptadenia pyrotechnica*

ETHNOBOTANICAL AND BIOLOGICAL ACTIVITIES OF *Leptadenia pyrotechnica* (Forssk.)

Saiba Idrees, Rahmatullah Qureshi,* Yameen Bibi, Aqsa Ishfaq, Nadia Khalid, Anam Iftikhar, Anam Shabir, Iqra Riaz, and Saboon Nabeela Ahmad
write:¹⁰

The history of medicinal plant is parallel to the human beings. People use the native plants to fulfill their basic needs. They are the cheap source for the extraction of structurally novel compounds (Shaw & Singh, 2014). Plants are source of inspiration to halt the emerging infections and diseases

¹⁰ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5566157/>

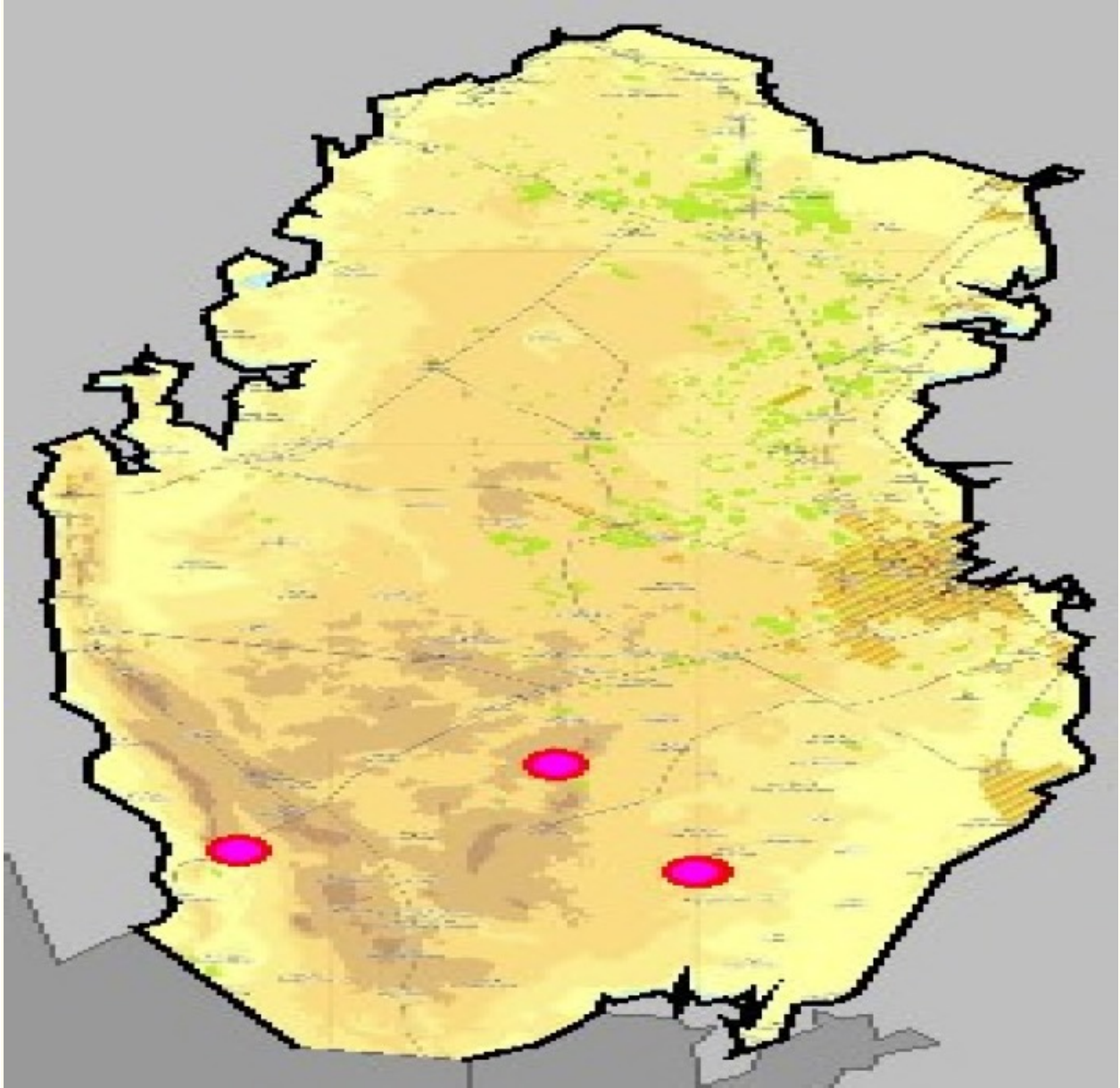
(Khan& Hanatu, 2013). Medicinal plants are indigenously used for different purposes throughout the globe. They performed cardiac role in the traditional medicinal systems. Instead of plant's importance in medicines or traditional medicinal systems, only 5% are analyzed for their potential and 95% are still remains (Mukherjee, 2004).

Phytogeographical Distribution

Leptadenia pyrotechnica (Forssk.) Decne. is a typical desert plant belongs to the Asclepiadaceae family (Ali et al., 2001). It is leafless, erect and evergreen shrub commonly known as Khimp, Kheep or Khip (Qureshi et al., 2012), which is used for multipurpose (Sadeq et al., 2014). It is native to Mediterranean regions, semi-arid deserts of African and Asian countries, where sandy and dry conditions prevail. It is also growing in northern dry sandy Sahel and in the western India (Burkill, 1985; McLaughlin, 2006). In Pakistan, it is present in the sandy deserts of Punjab, Sindh and Baluchistan. It is frequently found on sand dunes and interdunal flats in the Cholistan desert and used as medicinal plant (Hameed et al., 2011). It is also found along the seacoast (Ali et al., 2001). Locally it is known as Khip or Barda in Pakistan (Qureshi, 2004; Qureshi, 2013). It is planted in the month of September (Moustafa et al., 2007). Recently, it is also cultivated in forests, farms and on the roadsides (Khasawneh et al., 2011).

Morphology

Leptadenia pyrotechnica (Fig. 2) is a perennial, ascendingly growing, profusely branched shrub that is 0.5 to 3 meter in height. The stem is glabrous, green to pale yellow in color and have watery fluid/sap. It is leafless to deciduous small leaves which usually fall in the early stage of development. The flowers are yellowish green, bisexual, pentamerous and actinomorphic. The sepals are joined at the base and free at above and sympetalous. Blooming and fruiting time is August to January (Verma et al., 2014). It has pod like fruits that are cooked as vegetable. Its seeds are hairy in the form of tufts. Its roots are good soil binder that fixes the sand dunes due to elongated and extensive root system (Qureshi et al., 2012).



[Figure 1](#)

Worldwide distribution of *L. pyrotechnica*.



[Figure 2](#)

a. plant, b. seeds, c. flowers d. pods of *L. pyrotechnica*.

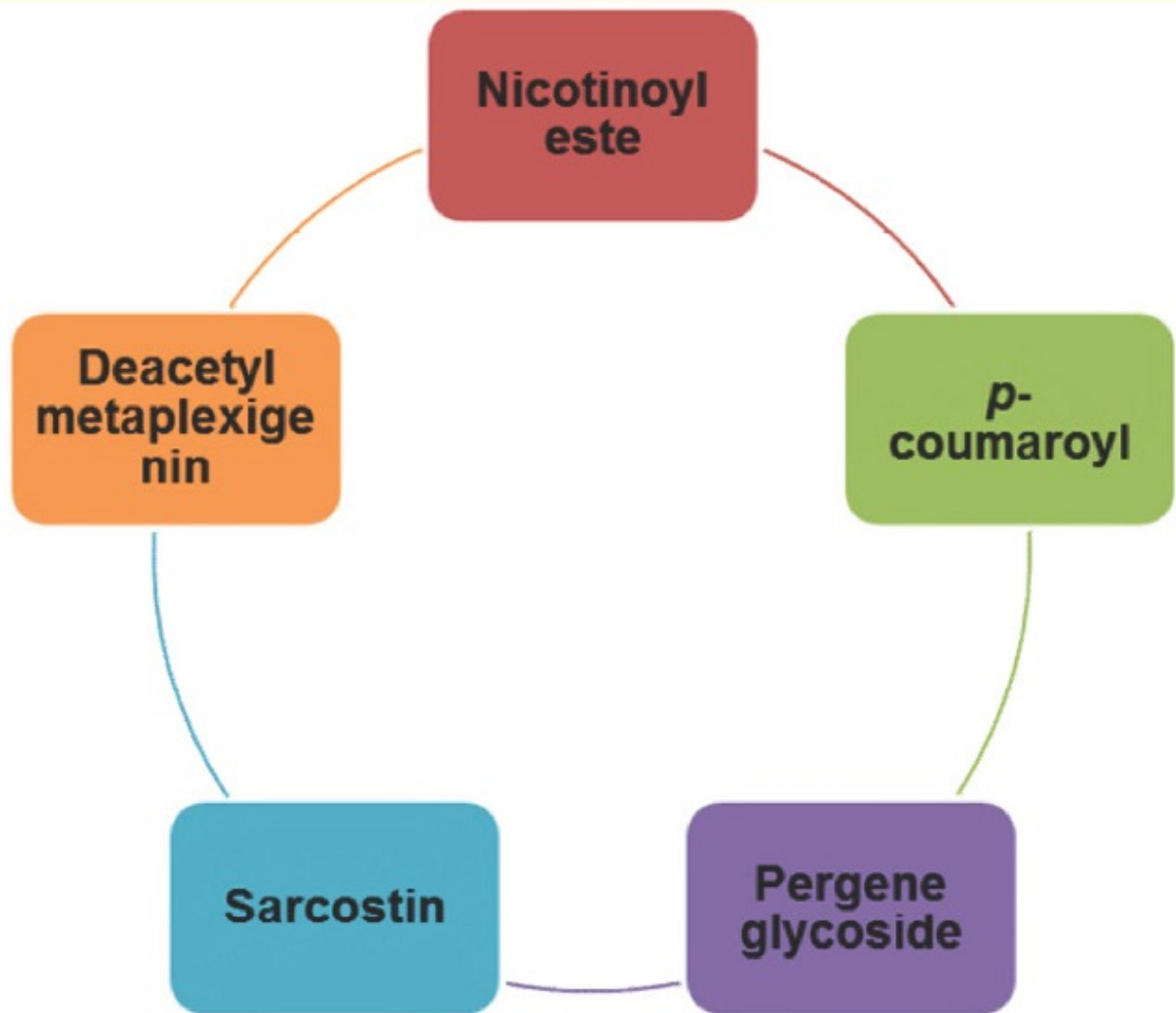


Figure 2

Key Phytochemicals screened from *L. pyrotechnica* (Ciofit al., 2006)

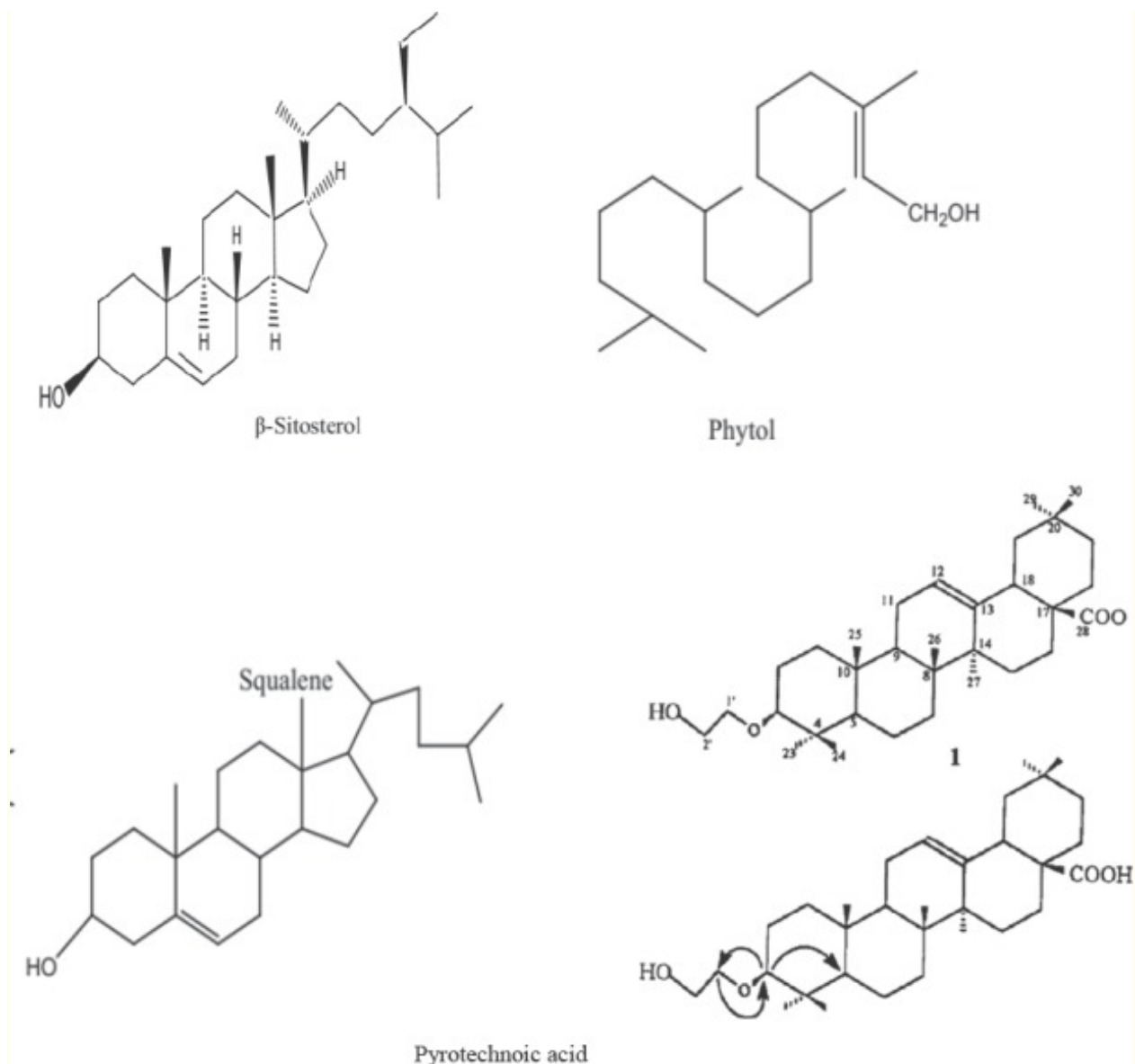


Figure 3

Phytochemicals present in the *L. pyrotechnica*.

Ethnobotanical Uses

In an ethnobotanical study of Cholistan desert in Pakistan by Ahmed et al. (2012) revealed the use of *L. pyrotechnica* for constipation, obesity and dysmenorrhea. For this purpose, the powdered leaf and shoot were used. Qasim et al., (2014) reported that the decoction of this plant is popularly used as a traditional ethno-medicine for upper gastrointestinal track (UGT) disorder, Spermatorrhea & impotency near the coastal areas of Pakistan. In Saudi Arabia, the decoction of seeds and whole plant is used to treat flu, lectogaue and tussive (Randa & Youssef, 2013). Watery juice of this plant is used against ringworm. Young branches are used to make ropes along with *Crotalaria burhia* in Nara desert (Bhatti et al., 2001). constipation, obesity and dysmenorrhea flu, lectogaue

and tussive muscle and kidney pain cold ringworm skin diseases and diabetes diuretic tuberculosis fever, hepatitis, constipation and obesity For the cough and cold, the stem juice was used two times in a day through nostrils in Mali (Diallo et al., 1999). While in Senegal, it is used for infant children as laxative and also used for muscle and kidney pain. For the removal of thorn or thorn injury, its leaf paste or latex is applied. The latex is also applied to remove ringworm (Qureshi, 2002). Its fiber has expectorant activity (Al-Yahiya, 1986). To remedy the skin diseases and diabetes, plant sap was applied (Parveen et al., 2007). Its stem is diuretic and used for the removal of kidney stones. *L. Pyrotechnica* extract is remarkably lower the rate of plaque formation in aorta (Saleh et al., 2012). Its roots are used as vegetables (Ali et al., 2001). It was reported that its boiled filtrate is used two times in a day orally to cure tuberculosis (TB) (Petal et al., 2014). People use their pods as vegetable. Its branches are soaked overnight in water and then used in making ropes used in huts formation (Qureshi, 2002). Some of the significant traditional uses summarized in [Table 1](#).

Table 1

Traditional uses of different Plant parts of *L. pyrotechnica*

Sr. No.	Plant part	Uses	References
1.	Leaf paste	To remove the thorn/ thorn injury	Upadhyay et al., 2010
2.	Stem juice	To cure cough, flu	Dialloetal., 1999
3.	Plant fiber	Used as expectorant and antihistaminic	Al-Yahiya., 1986
4.	Plant sap	For skin diseases and diabetes, smallpox, psoriasis	Kateva et al., 2006; Maydell, 1990
5.	Leaves and shoots	Used for fever, hepatitis, constipation and obesity	Ahmad et al., 2014

Sr. No.	Plant part	Uses	References
6.	Whole plant	It's warmed juice taken orally to remedy the jaundice	Sharma et al., 2012
7.	Seed	Macerated seed lotion is used as eye lotion	Burkill, 2004 & Maydell, 1990
8.	Yong twigs	Used as toothbrush	Maydell, 1990

Primary metabolites

Rekha et al., (2013) determined the primary metabolites in different plant parts of *L. pyrotechnica*. The primary metabolites are given in [Table 2](#).

Table 2

Metabolites present in different plant parts of *L. pyrotechnica*. MS matching results

Sr. No.	Plant parts	Composition
1.	Root	Protein (22.8±1.31mg/gdw), soluble sugars (24.2±1.42), lipid (22.9±1.38mg/gdw)
2.	Stem	Starch (38.5±1.34mg/gdw), Phenolic content (56.2±1.85mg/gdw)

Sr. No.	Plant parts	Composition
3.	Leaf	Lipid (32.1±0.41gm/gdw), Starch (30.2±0.34gm/gdw)
4.	Root	Soluble sugars (80.2±0.46mg/gdw), Phenolic Contents (15.43±1.25mg/gdw)

Pharmacology

Antifungal Activity

Rekha et al., (2013) evaluated antifungal activity of the leaves of *L. Pyrotechnica* to counter the four fungi viz., *Aspergillus niger*, *A. flavus*, *Fusarium oxysporium* and *F. moniliformis*. Among different extracts, methanol extract showed pronounced results against *A. flavus*, while, the aqueous extract responded more effective for *F. moniliformis*. While hexane and ethyl acetate have more resistant against *A. niger*. This activity might be due to the presence of alkaloids in the plant. By using this plant, certain antifungal reagents can be prepared by further working. The same antifungal and antibacterial activities also have been researched out very well in the literature (Fabry et al., 1998; Ahmad et al., 2000; Boer et al., 2005; Nair et al., 2005).

Antibacterial Activity

Al Fatimi et al. (2007) conducted an experiment to evaluate the antimicrobial activity by preparing methanolic, aqueous and Dichloromethane extract of whole plant of *L. pyrotechnica*. They checked the antimicrobial activity *in vitro* against *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa* and *Micrococcus flavus* by using agar diffusion and DPPH methods. At 10%, 50% concentrations showed the good results in human amniotic epithelial cell lines, while the same was weak against FL- cells. Another study carried out by Munazir et al., (2012) for the antibacterial activity of *L. pyrotechnica*. The root and fruit extract in eight different solvents i.e. water, n-hexane, methanol, chloroform, ethanol, acetone, butane and ethyleacetate were tested against *Staphylococcus epidermidis* and *S.aureus*. Root extract showed better results as compared to the fruit extract. While, methanolic extracts of both parts gave good results in inhibiting growth of both the pathogens.

Anticancer Activity

Khasawneh et al., (2011) experimented the plant extract in ethyl acetate of about (IC₅₀ = 43.16 µg/mL). The extract showed anticancer activity against MCF-7 human breast cancer cell line. In the same experiment the antioxidant activity was evaluated. For this purpose water, ethyl acetate

and n- butanol extracts of aerial parts of *L.pyrotechnica* were used that established significant activity.

Antioxidant Activity

To check the antioxidant activity, 2, 2'-azino-bis (3- ethylbenzothiazoline-6-sulfonic acid (ABTS), Ferric Reducing Antioxidant Power (FRAP) and β -carotene and 2, 2-diphenyl-1 -picrylhydrazyl (DPPH) assays were used. The good results are showed by FRAP followed by ABTS and DPPH assays (Saleh et al., 2012). Anti- inflammatory and antioxidant potential of *L. pyrotechnica* was also evaluated by using ethanolic extract of *L. pyrotechnica* EELP in 400mg/kg concentration on rats. The free radical activity of root and aerials parts of the plant was carried out by Munazir et al., (2015b) by using methanolic extract. The results showed that both plant parts possessed significant radical scavenging activity as compared to the synthetic drug i.e. Butylated Hydroxy Anisole (BHA). Aerial parts showed maximum electron donating activity at 100 μ g/ml, while root showed more radical scavenging activity.

Wound healing property

Wound healing activity of *L. pyrotechnica* was evaluated by Shaw & Singh (2014). They prepared ethanolic extract by taking root and aerial parts powder further into petroleum ether and ethanol. It was observed that 4% (w/w) aerial parts showed more wound healing activity than root extract in Wistar albino rats. This activity may be attributed to the presence of terpenoides and flavonoids that triggered astringent and antimicrobial property.

Anthelmintic activity

The anthelmintic activity of methanolic extract of *L. pyrotechnica* has profound effect on the GIT worms. Methanolic extract of 100 mg/ml showed the highest activity compared with the standard drug Albendazole (Kumar et al., 2011).

Antiatherosclerotic and hypolipidemic activity

A study was conducted by Jain et al., (2007) in which antiatherosclerotic and hypolipidemic activity of aerial parts of *L. pyrotechnica* was confirmed. Methanolic crude drug of Khimp was prepared and administered at 250 mg / wt. / day kg dose to the coconut fed albino rabbits. It was observed that methanolic extract considerably lowered the hepatic and aorta total cholesterol, LDL-cholesterol and HDL-cholesterol ratio, VLDL- cholesterol and triglycerides. On the other hand, it also prevented the plaque formation in the arteries. The mechanism behind this was the more cholesterol absorption in the intestine and increased the removal of cholesterol through fecal. In a review by Joshi & Jain (2014) on hypolipidemic and antioxidant activity of medicinal plants also revealed the hypolipidemic activity of *L. pyrotechnica*.

Antidiabetic activity

Chaudhary et al., (2011) conducted an experiment in which antidiabetic activity of *L. pyrotechnica* was evaluated in Straptozotocin induced diabetic rats. They administered the methanolic extract of *L pyrotechnica* (MELP) to rats at 100, 200 & 300 mg/kg for 21 days.

According to them, MELP administered rats exhibited the dosage dependent reduction in blood glucose along with reduction of glycogen in liver, cholesterol and triglycerides in serum.

Hepatoprotective Activity

An experiment was conducted by Tewari et al., (2014) on the paracetamol treated rats by using albino wistar rats. Three groups viz., 1) control, 2) treated with paracetamol and 3) paracetamol treated and administered with the methanolic extraction of *L. pyrotechnica* was employed in the experiment. The paracetamol affected rats showed the symptoms of liver necrosis, reduced hepatocytes, cytoplasm vaculation and compression of sinusoids. The 3rd group treated with methanolic extraction showed 100% results with healthy liver compared to the controlled group. The *L. pyrotechnica* extract remarkably reduced the hepatic enzymes activities like SGOT, ALP & SGPT. The results showed that *L. pyrotechnica* has obvious hepatoprotective activity.

Anti-tumor activity

Moustafa et al., (2009a) conducted a study and evaluated the antitumor activity on the Brine shrimps. Alkaloids from aerial parts and alcoholic extracts were used in 63.09 and 11.89ppm concentration. Results showed that alkaloids and alcohol showed -33.6% and -49.3% antitumor activity, respectively. This activity was due to the presence of the alkaloids in the aerial parts.

Toxicity

Watafua and Geidam, (2014) examined the subacute toxicity of the ethanolic extract of *L. pyrotechnica* (EELP) tested on the albino rats for 21 days. Three concentrations viz., 50mg/kg, 100mg/kg and 150mg/kg of their weight were given to the three groups of Wister rats. After 21 days, the serum and liver of rats was taken to check the toxicity of EELP. The results showed that the administration of EELP was slightly toxic to the liver.

Phytochemistry

Qualitative phytochemical screening

Qualitative and quantitative phytochemical screening from root and aerial parts of *L. pyrotechnica* was determined by Munazir et al., (2015a). Eight polar and non-polar solvents (hexane, acetone, butanol, ethanol, methanol, ethyl acetate, water and chloroform) were used. The results revealed that both plant parts contained four major phytochemicals such as alkaloids, tannins, flavonoids and saponins. Besides, Methanolic extract extracted maximum phytochemicals than the rest of solvents.

Pyrotechnoic acid

Ali et al., (2001) in an experiment isolated the of triterpenoid compound belonging to the Olean series by using heteronuclear multiple bond correlation HMBC and hetero-COSY technique which. It was the new addition in the pentacyclic triterpenoid that was named as 3-glycol-oleanolic acid or Pyrotechnoic acid. Another pentacyclic triterpenoid was isolated from *L. pyrotechnica* by

Noor et al., (1992). They named that chemical as leptadenol that was isolated by chemical and spectrometry analysis.

Fatty acid, hydrocarbons and terpenes

Chemical constituents such as sterols (stigmasterol, cholesterol, β -sitosterol, campasterol and fucosterol), terpenes (phytol, taraxerol and squalene), fifteen types of fatty acids that also include 11 n-alkanol, one n-alkene (3-tetradecne) and series of n-alkanes were investigated from aerial parts of *L. pyrotechnica* by Moustafa et al., (2007). They identified these phytochemicals including 18 aromatic hydrocarbons 5-phenyl-undecane and 6-phenyl-tridecane as major element. Sherwani et al., (2009) reported 32% vernolic acid and different fatty acids isolated from the seeds of *L. pyrotechnica*.

Alkaloids

Moustafa et al., (2009b) performed an experiment and isolated six simple amines and 24 alkaloids by using aerial parts of *L. pyrotechnica*. These alkaloids were belonged to the indole, pyrrol, and pyrazine and pyridine groups.

Flavonoids

In another study conducted by Moustafa et al., (2009a) isolated six flavonoids from the Khip plant by using low pressure chromatography, high performance liquid chromatography and paper chromatography. These flavonoids included kaempferol-3-*O*- α -L-rhamnopyranosyl (1'''' \rightarrow 6''')-*O*- β -D-glucopyranoside (E-I.1), kaempferol-3-*O*- β -D-rhamnopyranosyl (1'''' \rightarrow 6''')-*O*- β -D-glucopyranoside (E-I.2), texasin-7-*O*- β -D-glucopyranoside E-II.2, kaempferol-3-*O*- β -D-glucopyranoside (E-III.1), kaempferol (E-IV.1) and kaempferide-3-*O*- α -L-rhamnopyranosyl (1'''' \rightarrow 6''')-*O*- β -D-glucopyranoside (E-I.1a). The toxicity of these flavonoids was also checked on brine shrimps that showed that E-I, E-I.1 and E-I.2 cause more mortality than the rest of the flavonoids.

Cardiac glycosides

Three cardiac glycosides were isolated by Moustafa et al., (2009c) from the plant. These glycosides included 14, 19-dihydroxycard-20 (22)-enolide-3-*O*-[β -d-glucopyranosyl-*i*-d-digitoxoside] C-I, 14, 19-dihydroxycard-20 (22)-enolide-3-*O*-[β -d-glucopyranosyl-*S*-d-glucopyranoside] C-II and 14, 19-dihydroxycard-20 (22)-enolide-3-*O*-*l*-d-digitoxoside, C-III.

Miscellaneous Uses

Biomass production

The role of *L. pyrotechnica* in biomass and productivity was studied by Singh et al., (2012) in desert. They divided the desert in three agro-climatic zones and concluded that the stem has more nitrogen and carbon contents than the roots. The carbon and nitrogen contents in the stem were 43.32%, - 45.86 and 0.41% - 2.21%, respectively; while the root contained 39.45%, - 42.51% N

and 0.57%, - 1.69% C. These results indicated the soil binding and stabilizing potency of Khip plant in desert.

Water purification

Shyam & Kalwania, (2013) stated that *L. pyrotechnica* possessed the high amount of calcium ions that have the ability to interact with negatively charged fluorides. In India, this property was used to precipitate out the high concentration of fluorides ion by using Khimp powder in Sikar aquifers.

Khip fiber

Stem of Khip plant is the source of bast fiber. It is lignocellulosic in composition and has short fibers. Mojumder et al., (2001) studied the chemical characteristics of khip fiber. They obtained the fiber by crushing the green stem and then retting it. According to them, 8-10% khip fiber can be obtained from the green stem. Based on its physical and chemical properties, khip fiber can be used in pulp, cellulosic and paper industry as raw material. Due to its short fibers, it can be used only with other fibers like cotton to produce polyester and other goods. The khip plant also used to make handmade paper and for making boards (Kundu et al., 2005).

Biotechnological work:

Dutta et al., (2012) carried out experiment on the gene insertion in *L. pyrotechnica* due to its multipurpose use. For this purpose, gus and gfp proteins were transferred by agrobacterium mediated transformation. The expression of transferred proteins was evaluated at different plant stages. For this purpose, five day old hypocotyl of seedling was chosen. The transgenic plants were evaluated by polymerase chain reaction (PCR) and southern blotting. The results showed the successful gene transformation that could be used for the insertion of desired genes in *L. pyrotechnica* in future.

Plant conservation and management

Due to the highly medicinal value and rapid usage of the *L. pyrotechnica*, it was necessary to conserve the plant for future. Various studies have been carried out on the ecological, ethnobotanical and biochemical aspects of that plant. In literature, micropropagation of *L. pyrotechnica* has been reported (Parabia et al., 2007; Sudipta et al., 2011). The callus formation was performed by using plant hormones (i.e. Cytokinin & Auxin) from the explant parts (Qureshi et al., 2012). Results revealed that the nodal parts were more efficient for callus induction (90%) than the internodal (5%) and pod (no callus formation) explants. This was the first time to produce efficient callus from the nodal parts of plant (Qureshi et al., 2012). *In vitro* shoot multiplication was performed by (Dagla et al., 2012) by using cotyledonary nodes of explant of *L. pyrotechnica*. The shoots were firstly planted in nursery and then in the natural habitat successfully. The experiment on the somatic embryogenesis was devised by Sadeq et al., (2014) to conserve that endangered plant in Bahrain. In this experiment various amounts of IAA and BAP were used. 8.88 μ M IAA and 1.14 μ M BAP showed the maximum callus induced plant regeneration.

Conclusion

Desert landscapes are the world's contour images of vast barren lands with scanty thorny plants having enormous medicinal values. These plants possess numerous phytochemicals that play an important role as active constituents. *L. pyrotechnica* is one of those desert plants that have multiple uses. This species possesses antifungal, antibacterial, anticancer, antioxidant, wound healing, anthelmintic, anti-atherosclerotic, hypolipidemic, anti-diabetic and hepatoprotective activities coupled with other multifarious uses. Present review is just a glimpse to attract the scientists to divert their attention towards deserts and particularly to further develop the existing remedial potential of *L. pyrotechnica* for the development of modern medicine in future.