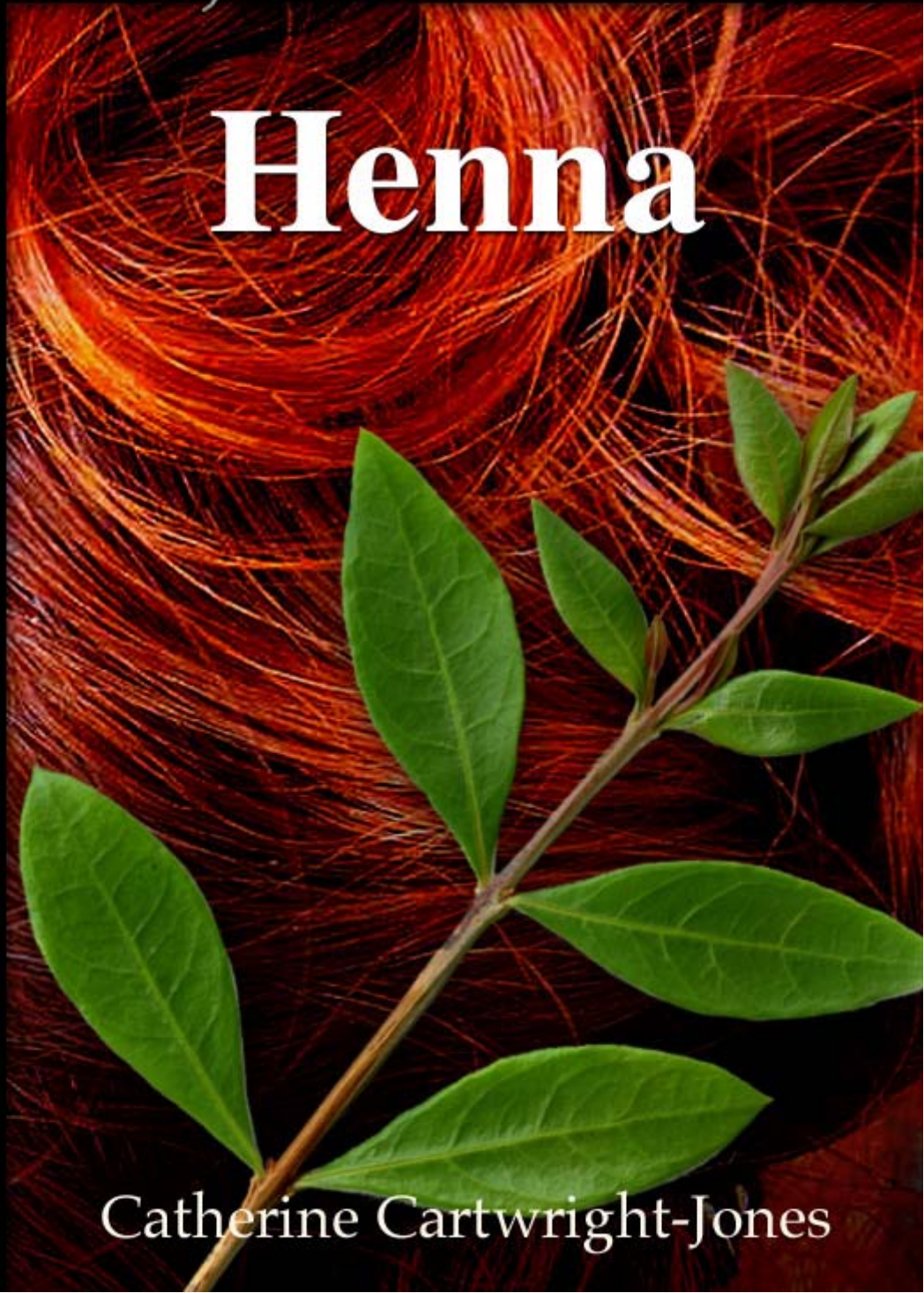


Henna for Hair "How To"

Henna

Catherine Cartwright-Jones



Henna for Hair "How-To" Henna
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Contents:

Chapter 1: What is Henna?	5
Chapter 2: What is compound henna, and why are there packages labeled henna in a variety of colors?	9
Chapter 3: A little history of henna and hair dye in the west	10
Chapter 4: How do you dye your hair with henna?	20
Chapter 5: How do you dye your hair brunette with henna and indigo	33
Chapter 6: Dye your hair black with henna and indigo	38
Chapter 7: How do henna and indigo dye gray and other hair colors?	46
Chapter 8: What is Cassia?	50
Chapter 9: Things to Remember:	46
Chapter 10: How do you do this in a hair salon?	53
Chapter 11: Quick Mix Reference Chart	55
Chapter 12: Henna kills head lice, ringworm and dandruff	56
References:	57
Laboratory Certified Henna:	58

For further information on henna and hair, please visit www.hennaforhair.com

To purchase henna, please visit www.mehandi.com

HELP DESK AND ORDER DESK: 330-673-0600

Or toll-free 855-MEHANDI

You can use body art quality henna in your salon! Call us for information and stylist discounts

A note on 'black henna' temporary tattoos

If you ever had a 'black henna' temporary tattoo, there is a very good chance that you are allergic to black hair dye. Artists paint high concentrations of para-phenylenediamine on to skin to create black henna temporary tattoos, and para-phenylenediamine is in virtually all permanent oxidative hair dyes. If you had a black henna temporary tattoo as a child, and had any itchy reaction, it will be very dangerous for you to use chemical hair dye as an adult. It will be safe for you to use laboratory certified henna on your hair.

4



Henna for Hair “How-To”

Henna

Chapter 1: What is Henna?

Henna, *lawsonia inermis*, is a plant. It is a large bush, or small tree, that grows in hot, dry climates. There is evidence from Egypt that henna was regularly used to dye hair five thousand years ago, and may have been used in Jericho as early as eight thousand years ago. Henna was used to keep hair healthy and to color gray hair.



Figure 1: Henna, *lawsonia inermis*

Henna leaves are harvested, dried, and powdered. When mixed with a mildly acidic liquid, henna will stain skin, hair, and fingernails reddish-orange.

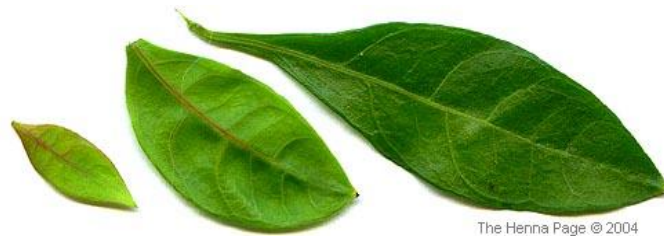


Figure 2: Henna leaves



Henna's leaves have a red-orange dye molecule, *lawsone*. You can see it in young leaves in the center vein of the leaf. Henna leaves have 1% to 4% lawsone content, depending on climate and soil conditions. The lower dye content leaves are harvested, roughly powdered and sifted, and sold to the hair dye industry.

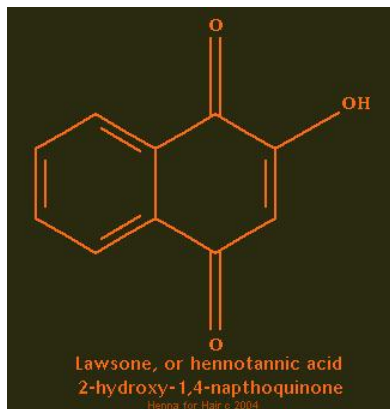
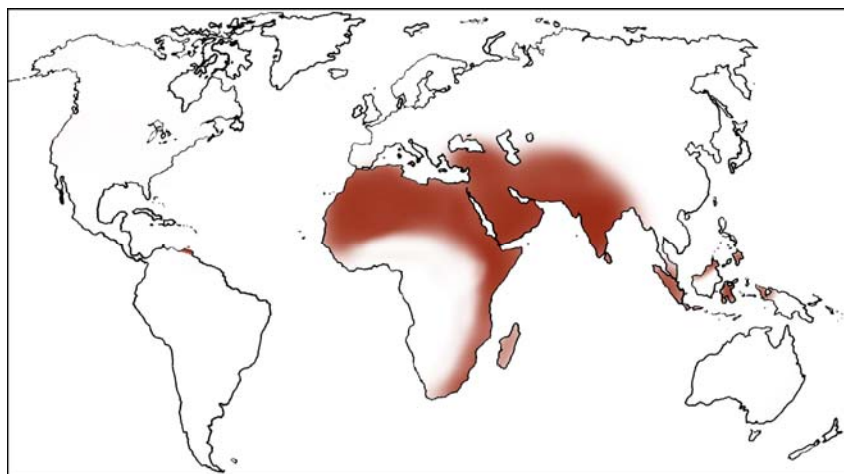


Figure 3: Lawsone, the dye molecule in henna

The highest dye content henna, the best five percent of the crop, is powdered and finely sifted to make designs on skin, such as are used for celebration in North Africa, the Middle East and South Asia. This is body art quality (BAQ) henna. Body art quality henna is wonderful for your hair because the fine powdering and sifting make it rinse out easily, and will dye hair a richer color.



Figure 4: Body art quality henna is used to make reddish-brown patterns on hands and fingernails, and is considered beautiful and lucky.



**Figure 5:
A map of where henna grows and is traditionally used**

Henna was grown and used in the areas seen the map above. Henna has been used and loved by women in those areas for thousands of years. Henna does not grow in Europe or the Americas, and has never been widely used there.

Though henna grows in many countries, henna only comes in ONE color, however, there is a range of that color based on the climate and soil where it is grown. Some hennas have higher dye contents than others. The highest dye contents are from the most hot, arid climates.

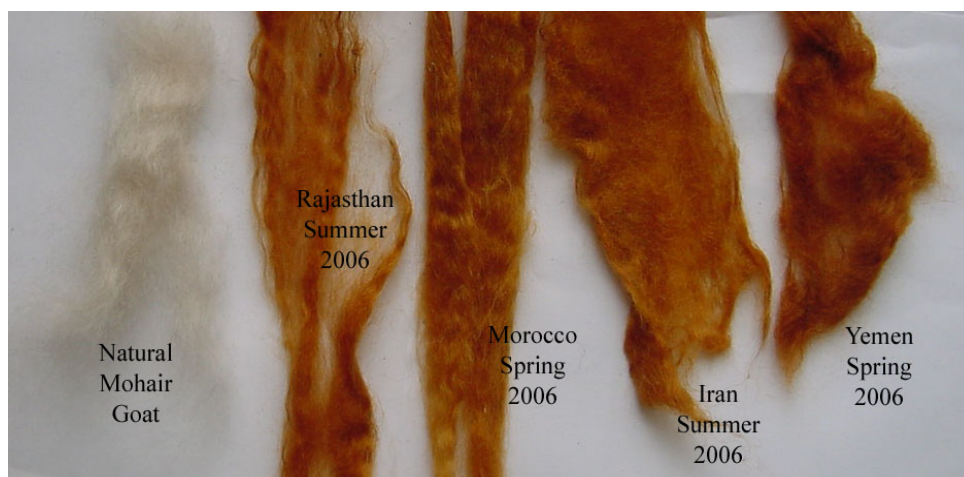


Figure 6: Henna from different countries, compared on white mohair

7



Boxes of commercially produced “henna hair dye” are formulated in a range of colors, “brunette henna,” “strawberry blonde henna,” “black henna,” and so forth. The range of colors is produced by adding synthetic dyes, metallic salts, and other plant dyes. Sometimes these are added to mask poor quality henna. Body art quality henna does not have these chemicals. Body art quality is pure, 100% henna, with the highest dye content of the harvest. Any company that claims they create the wide range of henna colors with 100% henna, using henna from different countries, or using roots, bark, or other parts of the henna plant to achieve their colors is talking nonsense. Henna only has one dye molecule, no matter what country it comes from. Lawsone is only produced in large quantities in the henna leaves. There are absolutely no such plants as “black henna,” “red henna,” and “neutral henna,” and no parts of the henna plant produce “black” or “neutral”.



Figure 7: Old packages of “henna hair dye” labeled black, brown and neutral, which contained little or no henna

Chapter 2: What is compound henna, and why are there packages labeled henna in a variety of colors?

The commercially available henna hair dyes that come in “colors,” such as black, brunette, chestnut, blonde, and so on, are *compound hennas*. The manufacturers take lower quality henna and add toxic metal salts, chemical dyes, other ingredients, even para-phenylenediamine, to create a range of colors! These added ingredients are often not listed, because the countries of origin do not require declarations for cosmetics, and once exported to the west; there is no requirement that the additives be declared. These pre-packaged hennas are often termed “natural herbal henna.” This is very misleading as these are not natural products; they are full of chemicals. Metallic salts alter and fix color in lieu of higher quality henna. The

8



compounds of henna and metallic salts can react disastrously with synthetic hair dye, seriously damaging hair. The most frequently used material is lead acetate, though silver nitrate, copper, nickel, cobalt, bismuth and iron salts have also been used. Dyes with lead acetate gradually deposit a mixture of lead sulfide and lead oxide on the hair shaft. When you hear that henna has “metal,” “lead,” or “coats the hair,” and “leaves it brittle,” a compound henna dye is being referred to, full of toxic substances.

Hair bleach, permanent hair color, and permanent wave solution are a disastrous combination with compound (metallic salt) henna dyes. These can result in green, purple, or totally fried hair. **Body art quality henna does NOT have metals, lead, and it does NOT “coat the hair.” The molecules in pure body art quality henna penetrate and bind with your hair’s keratin, and make your hair thick, strong, and silky!**

How can you find out if the hair dye you've been using is compound henna full of toxic metallic salts? It's probably NOT listed on the label.

Harvest some of your hair from your hairbrush.

Mix one ounce (30 ml) of 20-volume peroxide and 20 drops of 28% ammonia.
Put your harvested hair in the peroxide-ammonia mix (this is in synthetic hair dye).

If there's lead in the compound henna you've used, your hair will change color immediately.

If there's silver nitrate in the compound henna you've been using, there will be no change in hair color, because silver is coating the hair. However, silver nitrate leaves a greenish cast to your hair, so you can tell by that.

If there's copper in the compound henna you've used, your hair will start to boil, the hair will be hot and smell horrible, and the hair will disintegrate.

With all the unlisted ingredients in compound henna products, no wonder henna's gotten a bad rap!

Chapter 3: A little history of henna and hair dye in the west

Compound henna products, such as those called “black henna,” “red henna,” and “neutral henna” exist because of secrecy and confusion in the history of henna hair dye. From time to time, when trade relations were good and commerce was brisk between North Africa, the Middle East and Europe, henna was one of the goods traded. Europe was too cold to grow henna and indigo, so the technologies of using these plants as hair dye were unknown. Until recently, most of the henna exported to the west as hair dye was grown in Egypt.





Figure 8: During the period of European colonial expansion, products well known to Turkey, the Middle East and North Africa were traded as exotic goods to Europe. These included henna.

At the end of the 19th century, women of Istanbul and Smyrna used an estimated 15,000 pounds of henna annually as hair dye. The major producers were Boyadgian, Sohandgian, Tahiz, and Karagheosian, who had shops in the main bazaar. Most of their henna hair dye products were “rastik,” or mixtures of henna and other materials, to produce a range of colors. The formulas of their rastiks were closely guarded secrets, but were compounds of oak gall, henna, alum, sugar, iron sulfate, copper sulfate, antimony, madder, buckthorn, and fragrance. These rastiks were adapted from the silk industry, and they can make hair brittle, just as they make silks brittle. These were the first compound hennas, which accompanied pure henna and indigo into the marketplace. There was no declaration of ingredients on these products, because none was required at the time, so nobody could tell what they were purchasing. Every hair dye was called “henna”, no matter what was in it.

When European diplomats and travelers went abroad, they lived and bathed with their hosts in Turkey, Egypt, Iran, Morocco, Algeria, India, and other countries. When it came time to bathe, they went to the public bath. These baths, called “hammam” in Arabic, were beautiful, relaxing places where a person went for most of the day to bathe, socialize with friends, catch up on gossip, get a massage, and get one’s hair cleaned up. Well groomed men groomed their hair and beards, and had them dyed with henna and indigo for special occasions.

Some western travelers were horrified to find their hair, beard, and mustaches slathered with green goop, and had no way to say to the barber “Stop! What is this muck?” When it was rinsed off, they saw the gray disappear, the hair shiny and healthy, and recorded such in their diaries, but without understanding what was actually involved in the green goop except that it was called *henna*.



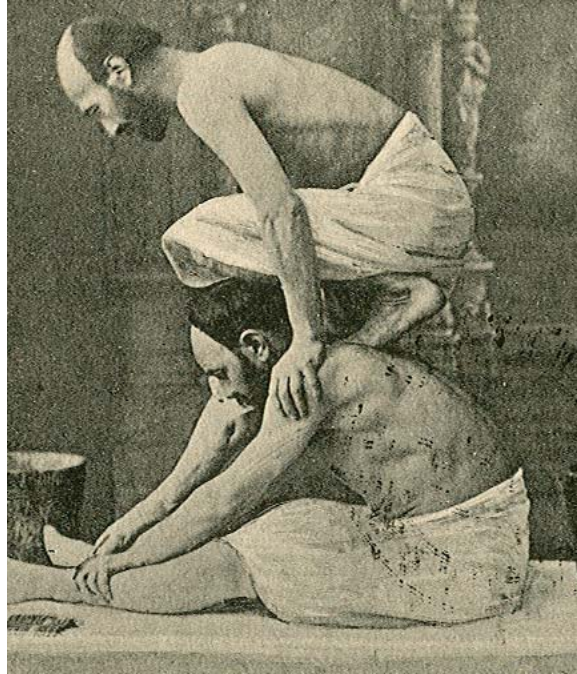


Figure 9: A nice massage at a men's bath

There were men's days and women's days at the public bath. Women were required to go to the hammam at least once a month, to clean their bodies after their menstrual period. Women prepared their special henna mixes the night before they went to the bath. At the hammam, there was plenty of time and helping hands to dye their hair with henna and indigo, and henna their fingertips, nails, and soles.



Figure 10: Hammam (public bath) in Morocco



European travelers often took a painter or photographer with them to record the exotic world, and brought home images of the baths, women with long, glistening hair, and men with jet black beards and mustaches. The opulent depictions of Turkish harem life and the beautiful long-haired women of the baths by Ingres and others caught the imagination of Europeans in the 19th century and created demand for products.



**Figure 11: Moroccan women combing and braiding long hennaed hair
Lehnert and Landrock 1910 – 1920, author's collection**

As European countries increased their trade relations with Turkey through colonial expansion, henna was exported to Europe along with carpets, tea, and other luxury goods. "Oriental Women," from the harems of the Middle East, were perceived in the European imagination as mysterious, sensuous, a combination of infinitely alluring and untouchable, as well as simultaneously barbaric and opulent. European and American women devoured "pulp fiction" stories of the exotic east, shocked, titillated, and desirous of a life that was filled with lust, luxury, passion ... and most everything else that they found lacking in their own lives.



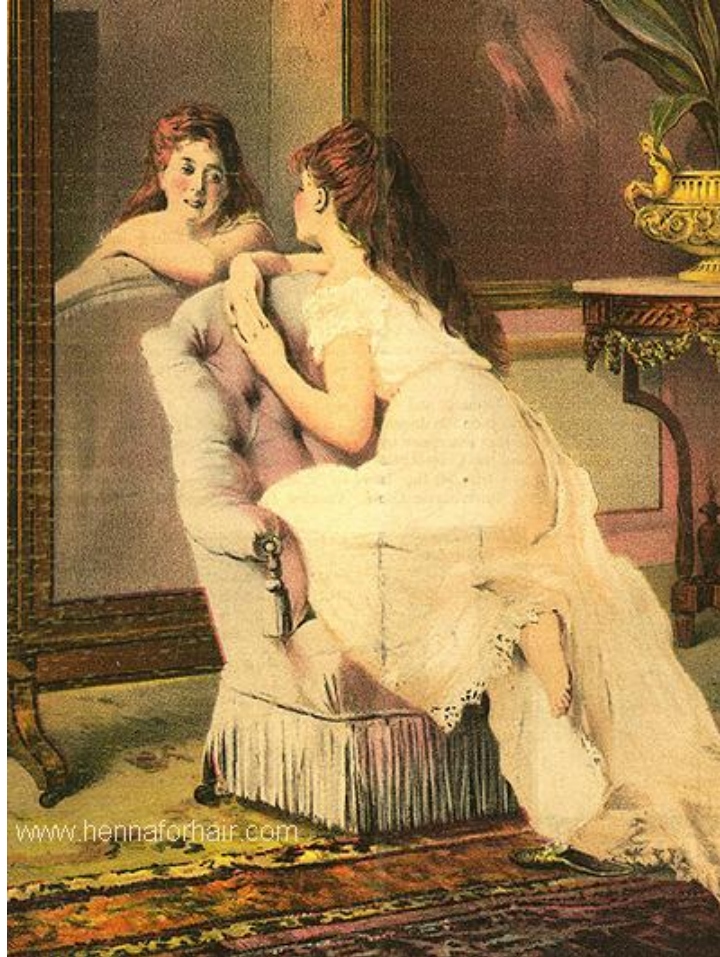


Figure 12: This European woman of the 1880's has hennaed her hair, her soles, as well as her nails, and is admiring the exotic results. She also has an imported Turkish carpet, exotic urn and plant.

Turkish merchants were happy to supply the goods European women felt might make them as desirable and exotic as they believed oriental women must be. One of the products shipped out was henna. Daring European women began to dye their hair with henna by the second half of the 19th century, and experimented with dying their nails and soles to take on some of the glamour they believed was the life of Middle Eastern women. They lolled on Turkish and Persian carpets, surrounded themselves with orientalia, and assumed exotic self-absorbed postures.

Madame Patti, a famous Victorian opera soprano, beauty, socialite, and international star, hennaed her dark hair through the late 1800's. She was credited with launching henna into the European fashion mainstream, as fashionable women admired her thick auburn hair, and emulated her. In 1900, she was the second most well known woman in England, after Queen Victoria, and was the superstar diva of her day. Men threatened to kill themselves if Madame Patti would not take them as a lover. Women longed to be like her: wealthy, beautiful, famous, exotic, romantic, and adored, with a mane of hennaed hair. Women could

13



purchase the henna, if not her glamour. At the peak of her fame, she would have been going gray, and hennaed to keep her hair fashionably youthful, thick, long, dark and reddish.



Figure 13: Hennaed hair became a symbol of exotic oriental sexuality

During the late Victorian and early Edwardian era, women grew their hair very long, and showed it off in luxurious chignons, rolls, and puffs. Many used henna to keep their hair sleek and thick, and to cover the gray as needed. In 1900, the beauty editor for "Queen", London's newspaper for ladies, was surprised at the new fashion for white or pale hair, commenting that gray hair hadn't been seen on fashionable women in the previous decades. Women had been covering their gray and dying their blonde hair red to auburn with henna. The editor also commented that though hairdressers in Paris and New York claimed they could bleach hair white, it was not done in London, and the process could not be done safely.



Figure 14: Henna assisted the fashion for long, heavy hair

14





Figure 15: Early USA hair dyes with hazardous ingredients

In the early 1900's, women in the USA wanted to dye their hair, but henna was a scarce and exotic import. They tried plant-based textile dyes. However these are rarely suitable for hair because they require boiling or caustic mordents. They tried using chemicals including the newly developed coal tar based dyes used in the textile and fur industry: particularly the newly developed para-phenylenediamine. These were effective, but potentially deadly. In February, 1928, a physician wrote a banner article for Good Housekeeping magazine, titled "Shall I Dye my Hair?" This article followed a number of toxic poisonings in New York City caused by hairdressers applying para-phenylenediamine dyes. The doctor stated flatly that the only safe and effective dye for hair was henna. New York City passed an amendment to the Sanitary Code in 1926 to prohibit the use of noxious chemicals in hair dyes and cosmetics. This law had little effect. Women wanted to color their hair.

15





Figure 16: Henna shampoo from 1929

In 1900, Egypt dominated commercial henna cultivation and export to the west. Advertisers took advantage of the idea that Egypt was sexier, more exotic, more passionate, more mysterious, and full of ancient knowledge than anything the US had to offer. The discovery of King Tutankhamen's tomb and the popularity of Rudolph Valentino's "Sheik" character influenced the prominent Egyptian iconography on many henna products.

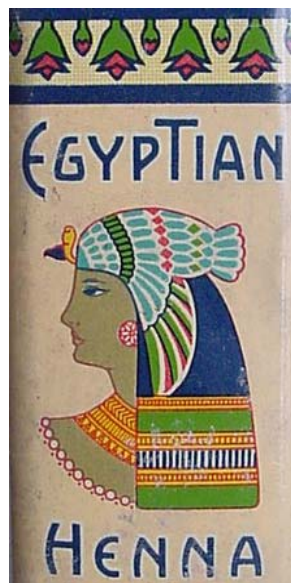


Figure 17: Ancient Egyptian imagery on henna hair dye by the Vivaudou company, New York, early 1900's

16





Figure 18: Package of pure henna hair dye from the early 1900's, USA

Through the 1920's and 30's, henna and mixes of henna, indigo, and cassia and other chemicals (called red henna, black henna, and neutral henna) dominated the hair dye market to the point that all hair dye was referred to as "henna" in the USA. Even "white henna" was sold, which was certainly not henna, but a white alkaline mineral powder to be mixed with peroxide, meant to make hair a pure "Jean Harlow" blonde goddess platinum white.



Figure 19: Hair product from 1920 containing "precious magic-like Rezolium" and "White Henna"

The health hazards of "secret" hair dye formulas, as well as health risks of unsanitary hairdressing practices led to regulation, training and licensing of American cosmetologists in the 1930's. This was good in that it educated cosmetologists in safer handling of potentially dangerous chemicals to hair, but it was unfortunate in that it promoted chemical dyes over natural dyes without recognition of potential health effects. There was a strong bias towards "becoming scientifically beautiful through modern chemistry" and as each

17



edition of cosmetology textbooks was updated, the understanding of henna lessened, until it fell to brief inaccurate mentions accompanied by a strong admonition to avoid entirely. As long as there was no way to tell what was in a box of henna, the warning to avoid henna entirely made sense, as many of the unlisted additives reacted disastrously with synthetic dyes.

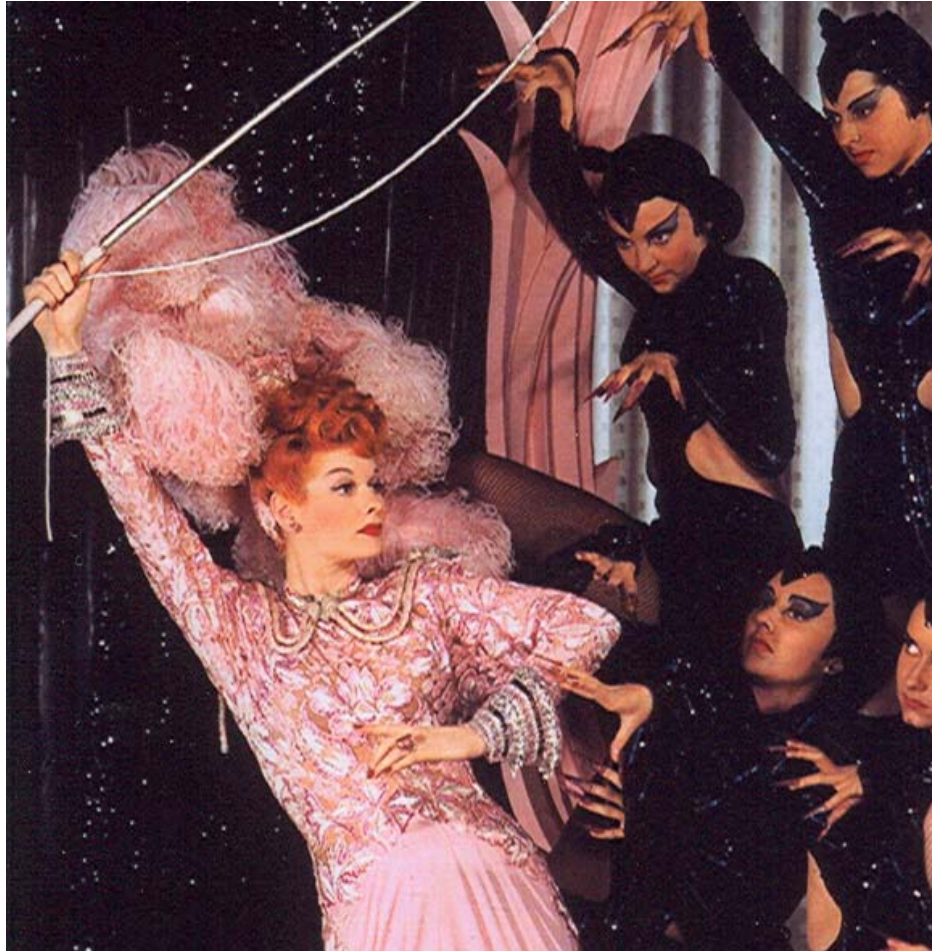


Figure 20: Lucille Ball dyed her blonde hair red with henna

Lucille Ball and other Hollywood beauties dyed their hair with pure henna when they could get it. Henna was exported from Egypt to the US, and not grown in the western hemisphere (except for a few places in the Caribbean, where it was cultivated by immigrant labor from India.) The henna supply in the USA was scarce and unreliable, and gradually fell into disuse.

The FDA, chemical manufacturers and physicians were aware that para-phenylenediamine dyes caused severe allergic reactions and could be fatal, but people insisted on using them. In the late 1930's the FDA and hair dye manufacturers agreed that if levels of para-phenylenediamine were kept below six percent in hair dye, then no warning labels would be needed and the manufacturers would be protected from

18



prosecution in injuries. This addressed the immediate problem of people being severely injured from hair dye, but it masked the dangers from allergic reaction, which include multiple chemical sensitivities, asthma, hair loss, blistering, and cross reactions with many other products. This limiting of para-phenylenediamine levels does not address other health risks from exposure to these chemicals, to the client and to the cosmetologist! Many cosmetologists find they become so allergic to para-phenylenediamine that they must quit their jobs and find another career. (Forty-five percent of cosmetologists are sensitized to para-phenylenediamine and have higher cancer risks than the general population, according to some studies NOT funded by the hair dye industry.) Many physicians advise patients with high cancer risks to discontinue using chemical hair dyes, and obstetricians regularly recommend their patients not dye their hair with synthetic dyes during pregnancy. So, the benefits of henna were forgotten in favor of the use of the cheaper, more predictable and highly profitable chemical dyes, and the hazards of those chemical dyes were ignored.

Henna continues to be a favorite hair dye in North Africa, the Arabian Peninsula, the Levant and South Asia, though western chemical-based beauty products are preferred by those who feel that modern inventions are always improvements. Others prefer henna to synthetic dyes because it is an expression of their history and cultural heritage, as well as making their hair healthy and beautiful.



Figure 21: Henna from Sudan and India

19



Chapter 4: How do you dye your hair with henna?

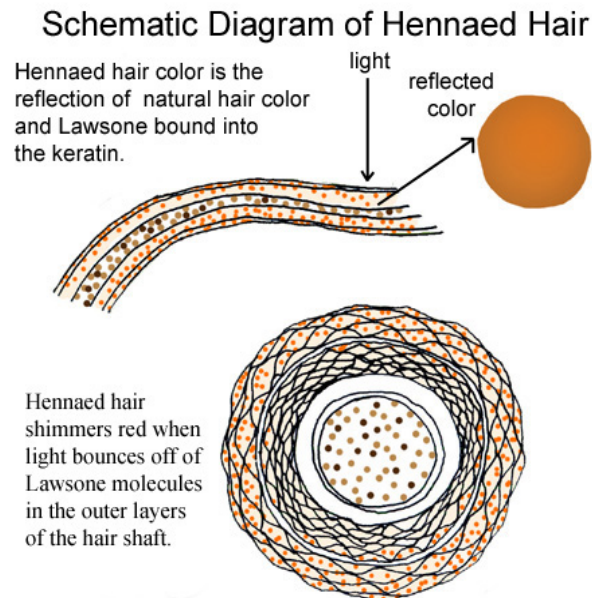
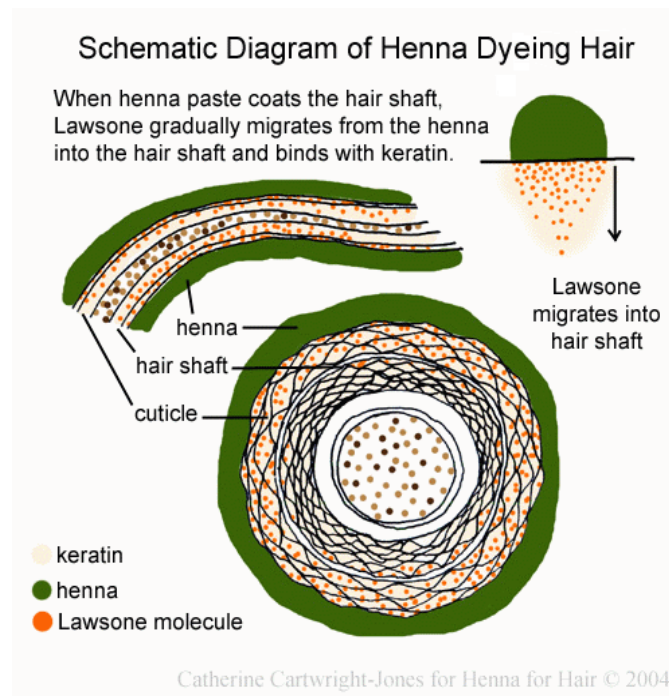


Figure 22: Diagrams of how henna dyes hair and the appearance of hennaed hair

20



The color you get will depend on the natural color of your hair.

All the following pictures were done with the same henna, but over different hair.



Figure 23: Henna on dark blonde hair over chemical dyes.



Figure 24: Henna on gray hair.





Figure 25: Henna on brunette hair



Figure 26: Henna on brunette hair that is going gray



Figure 27: Henna on hair that has been chemically bleached and dyed





Figure 28: Kathie and Lisa's hennaed hair: henna on Kathie's white hair looks red. Henna on Lisa's brown hair looks auburn.



Figure 29: Henna on black hair with some gray

Because the red-orange dye molecule is binding to the keratin that surrounds the pigmented hair core, the resulting color is different for every strand of hair, and for every person. The henna stain is translucent, and blends with your own color. Hennaed hair looks like you grew it yourself! Only body art quality henna is safe to apply over dyed, bleached, streaked, highlighted, relaxed, and permed hair.





Figure 30: Henna on African hair gives red highlights and relaxes the curl

Henna works wonders on African hair! It doesn't dye the hair red, but it does give red highlights, slightly loosens the curl and makes it silky. Body art quality henna will rinse out of locks, braids, and curls, and can be used over relaxed hair.

You can see from these pictures that body art quality henna makes hair sleek and shiny, and repairs damage from chemical processes. You can also see that henna combines with the person's natural hair color for beautiful, natural-looking results. Test henna on hair harvested from your hairbrush to see what it's going to look like before you commit to doing your whole head!

How do you mix henna for your hair?

It is necessary to mix henna with a mildly acidic liquid for two reasons. The cellulose in the henna powder must be dissolved to make the lawsone available. This is known as dye release, and lemon juice does this effectively. The hydrogen atoms on the corners of the lawsone molecule must be kept intact until the lawsone binds with the keratin in your hair. That will make the henna stain dark and permanent. If the hydrogen atoms do not stay attached to the lawsone molecules until the henna is in your hair, the stain will more orange and will fade.

Mix henna with enough lemon juice to make a paste as thick as mashed potatoes. Bottled lemon juice will work just as well as squeezing all those lemons. If your skin is sensitive to lemon and is itchy after using henna, use orange juice, grapefruit juice, or some liquid less acidic than lemon juice. Vinegar and wine work, but they're very stinky! Don't use yoghurt; the protein will interfere with the dye release and uptake. Mildly acidic herbal teas with some lemon do just fine. If your liquid is as sour as lemonade, it's sour enough.

Do not mix your henna with coffee. It won't change the color, and it will smell bad and give you a headache. A little clove powder may intensify the color, but may also irritate your skin.



Do not add “terps” to the henna paste as you do for body art. You are using far more henna on your hair than you’d ever use for body art, and the larger amount of terp will give you a headache and may make you nauseous.



Figure 31 and 31: Mix henna with lemon juice, or something else acidic.

Don’t mix your henna with boiling water. The stain from henna mixed with boiling water will fade to a lame brassy orange. The stain from henna mixed with lemon juice will gradually darken into a rich, natural deep red color. If you feel that lemon juice is harsh on your skin, mix half lemon juice and half distilled water. You can use other clear fruit juices or acidic teas, but do not use tap water. As long as your mix is about as sour as lemonade, it will do a good job.



Figure 32: A comparison of henna mixed with boiling water and henna mixed with lemon juice





Figure 33: Cover your henna with plastic wrap and let it sit overnight at room temperature. If you have to have it sooner, put it in a warm place.

Let your henna paste rest overnight at over night at room temperature, 70 F or 21 C. As your henna rests, it will release dye. The dye must be released from the plant leaf so it can migrate into your hair. This slow, acidic release will get you the best results. If you're in a hurry, put it in a warm place, but NOT a hot place! Your henna will be ready in two hours at 95F or 35C.

When you are ready to use your henna paste, stir in a little more lemon juice or a fragrant tea to make the paste about as thick as yoghurt.

How do you apply henna to your hair?

You can safely apply body art quality henna dyed, bleached, and chemically treated hair. You can apply synthetic dyes, bleaches and treatments over body art quality henna.

Remember:

- Don't be stingy with the mix. Thicker, longer applications mean richer color.
- If you like, you can do the roots only a few times between full hair applications.
- Wear gloves because this will stain your hands.
- You can most easily rinse your hair if you run a bathtub full of water, then lie down in the water and swish your hair around. Then, rinse the rest out in the shower.
- This works on beards and moustaches, too!

How much should you use?

- 100g will dye short hair.



- 200g will dye collar length straight hair.
- 300g will dye shoulder length straight hair.
- 500g will dye waist length hair.



Figure 34: Before henna, this hair has been chemically dyed red and faded badly, and has two inches of dark blonde roots. The chemicals aggravated her dandruff, and left her hair dull and damaged

Wash your hair and dry it before you put in the henna mix. Comb your hair so you can section it easily.



Figure 35: You can use piping bags or squeeze bottles to get the henna into your hair, or just smear it in with your fingers. Wear gloves!





Figure 36: Start at the back and work the henna clear down to the scalp. Apply the henna thick like cake frosting! More henna makes a richer stain. Bring down the next section and henna that.



Figure 37: Continue to section hair, smear in henna, and comb over the next section

Apply the mix thick into the sections, like putting frosting on a cake. Make sure all your hair is thickly coated with the mix, clear down to the scalp. This technique is very different from chemical dye application.

28



Don't be afraid to get messy. Don't be afraid to use plenty of henna. This process is relaxing, cooling, and there is medical test evidence that henna can soothe headaches. Henna can feel heavy on the head; during the application, its fun to pause and massage it into the scalp, and when done, take a nap. When women had their hair hennaed in North Africa and the Middle East, it was a day long process including entertainment, food, gossip with friends, several baths, and a full body massage.



Figure 38: When all the hair is covered clear to the scalp, and the perimeter is wiped clean, wrap everything up in plastic wrap. This will keep the henna warm and moist, and help the hair take up more dye.

When all of your hair is full of mix, wrap plastic wrap around your head, clean off your hairline and ears, and rest for 2 - 4 hours. If your hair is very resistant to dye, or if you are trying to completely cover gray, you can keep it on longer, even overnight. Find a comfortable spot and take a nap. Put a towel over the pillow.

Then, wash the henna mix out of your hair. If you have very long hair, and have a hard time getting all the henna out, lie down in a bathtub full of water and soak for a while. Then it will rinse out easily.

You can shampoo the last of the henna out. You don't need to use any particular shampoo. Some people love the smell of hennaed hair. Some people hate it. If you hate the smell, mix a tablespoonful of powdered ginger into your henna. Ginger eliminates the henna scent. Mehandi.com has ginger shampoo bars that will wash out the scent of henna. You can order ginger powder here:

<http://www.mehandi.com/shop/gingerspice/index.html> and shampoo bars here:
<http://www.mehandi.com/shop/shampoo/index.html>





Figure 39: When the henna is rinsed out, you can see that the dandruff is gone, the roots are completely covered, and the color is even over both the dark blonde and the faded chemical dye job.



Figure 40: At first, henna may seem coppery bright. Don't panic. This will darken during the next several days if you used an acidic mix.

30





Figure 41: Body art quality henna dyes hands and feet easily, but not your ears and nape of neck. If you wiped off the henna quickly, you won't see anything at all. If you didn't clean up, the stain will fade in three days.

- Your hair will take 3 days to settle into the true color. This is an oxidation process like a cut apple turning brown when left out in the air. Be patient and do not panic.
- Don't be stingy with the mix. Thicker, longer applications mean richer color. Apply henna like cake frosting. Get it clear down to the scalp.
- If you like, you can do the roots a few times between full hair applications. You can henna your hair as often as you like. Henna is good for you and your hair.
- Wear gloves because henna will stain your hands. If you don't wear gloves, you're going to have stained hands for a month. Don't say I didn't warn you.
- This works on beards and moustaches, too! You just have to cope with having green goop on your face for a few hours.



Figure 42: The color will be darker in three days. This is because lawsone is binding to the keratin molecule. If you mixed your henna with lemon juice or something acidic, it will darken. Lots.





Figure 43: At four days, you'll see a big difference in your hair color. It will be darker and richer. It will glow gloriously in the sunshine. People will stop you in the street and tell you you're gorgeous. Don't make any judgments on the color before four days. This is a natural process, and you can't rush Mother Nature.

Some people love the smell of henna that lingers in the hair. They say it smells earthy, natural, and sexy. Some people hate the smell of henna. The smell goes away in a few days. Here are some things you can do if you hate the smell.

- 1) Put clove powder in the henna mix. It may make the stain a little darker, and it smells nice.
- 2) Rinse your hair with lavender blossom tea or rosemary tea.
- 3) Put cinnamon powder in the henna mix. It doesn't change the stain, and it smells nice.
- 4) Stand near the dog and blame it on him.



Chapter 5: How do you dye your hair brunette with henna and indigo?

Indigo is a plant that has a blue dye molecule. Indigo is what dyes your jeans dark blue. You can dye your hair and cover gray without chemicals, just as you see in the picture below with different proportions of henna and indigo. If you use just henna over white hair, the color is coppery red. If you use just indigo, the color is blue. If you combine henna and indigo, you will get brunette colors. If there is more henna than indigo, the color will be warm reddish brown. If there is more indigo than henna, the color will be dark brown.



Figure 44: Henna and indigo combine to make brunette colors

You can safely apply body art quality henna and indigo over dyed, bleached, and chemically treated hair. You can apply synthetic dyes, bleaches and treatments over body art quality henna and indigo, because there are no metallic compounds in body art quality products.

33



How do you mix henna and indigo for your hair?

First, mix your henna just as shown on pages previously. When you're ready to dye your hair, mix the indigo.



Figure 45: When your henna is ready and you are ready to dye your hair, put your indigo powder into a bowl. Stir enough water into the indigo to make a paste as thick as mashed potatoes.

Indigo has to be used immediately. Do not wait for dye release. Mix your indigo with water just before you're ready to use it. Do not add lemon juice to indigo. Just use water. To make a medium brunette color mix equal amounts of henna and indigo. You can make a warm brunette color by mixing 2/3 henna and 1/3 indigo. You can make a dark brunette color, by mixing 1/3 henna and 2/3 indigo.



Figure 46: Mix the henna paste and indigo paste together. Add some water or fragrant tea to make it as thick as stirred-up yoghurt.

Stir this thoroughly, or you'll have streaky hair. Stir it more than you think you need to. Then stir it some more.



How to apply the henna/indigo mix:

Wash your hair and dry it before you put in the henna/indigo mix. Comb your hair so you can section it easily.

How much should you use?

- 100g of henna and indigo combined will dye short hair.
- 200g of henna and indigo combined will dye collar length straight hair.
- 300g of henna and indigo combined will dye shoulder length straight hair.
- 500g of henna and indigo combined will dye waist length hair.



Figure 47: Comb clean, dry hair and section it. You can use squeeze bags or squeeze bottles to apply the henna/indigo mix, but you can also smear it in by hand.



Figure 48: Section the hair and apply the henna/indigo mix very thick like frosting on a cake. Cover every hair clear down to the scalp.

35





**Figure 49: Keep sectioning and working in the mix.
Massage the mix into the hair to make sure very hair is thickly coated.**

When all of your hair is full of mix, wrap plastic wrap around your head, clean off your hairline and ears, and let the dye migrate from the mix into your hair for 2 - 4 hours. Take a nap if you like.



**Figure 50: Wrap your hair in plastic and clean off your ears and hairline.
Keep the mix on your hair a few hours.**

Wash the mix out of your hair. The color will take 2 days to settle into the true color. If you see a greenish color, don't panic. That will go away in a day or two as the indigo oxidizes.



Mix henna and indigo to dye hair reddish brown:

Do the same as above, but use two parts henna to one part indigo.

Mix henna and indigo to dye hair dark brown:

Do the same as above but use one part henna to two parts indigo.

Mix henna and indigo to dye hair very dark brown:

Do the same as above but use one part henna to four parts indigo.

Mix henna and indigo to make henna look less coppery red:

Do the same as above but use four parts henna to one part indigo.

Here's how to mix henna amla and indigo for a cooler brown hair dye:

Amla is a plant that has berries with very high levels of ascorbic acid. Amla powder is dried, powdered, amla berries. You can mix amla into your henna and indigo mix to make a cooler brown hair dye.

Do exactly the same processes as in the preceding pages, except that when your henna is ready to mix with the indigo, mix one part amla into three parts henna, then stir enough water into the mix to make it as thick as yoghurt.



Figure 51: A henna/indigo mix with and without amla

37



Chapter 6: Dye your hair black with henna and indigo

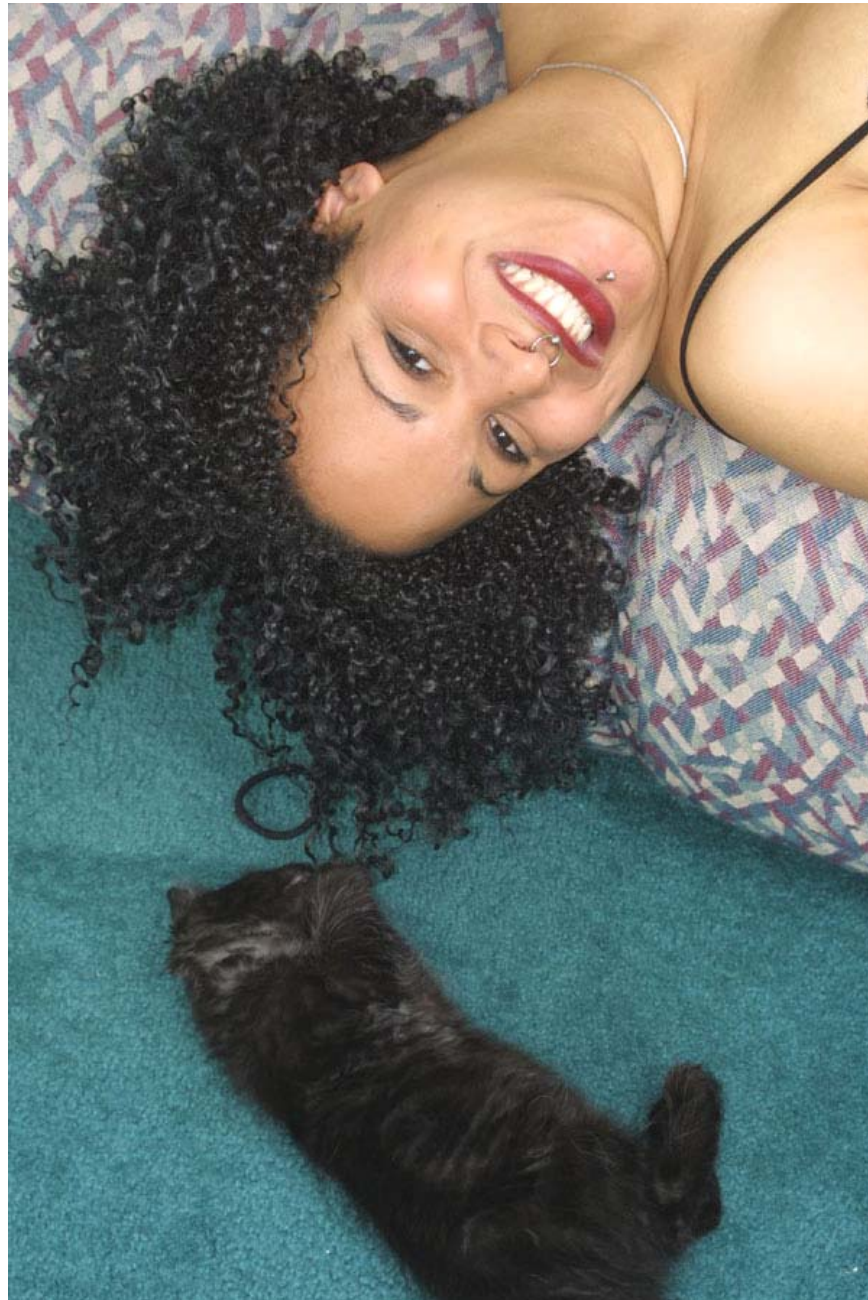


Figure 52: Dye your hair as black as your cat with henna and indigo

38



Black synthetic hair dyes are more likely to cause allergic reaction than any other color. If you itch or blister after you dye your hair black with chemical dyes, stop now. It will only get worse. Allergic reactions to hair dyes can be life threatening. Switch to henna and indigo to dye your hair black safely. You won't have an allergic reaction to pure henna and indigo, and your hair will become healthier, glossier and stronger. You can dye your hair beautiful black, and cover your gray hair to black with pure henna and indigo, without para-phenylenediamine or any other chemicals!

Gwyn (in the previous image) has frizzy brown hair. The henna/indigo process relaxes her curls, and makes her hair as glossy, sleek and black as her kittens! You can use pure body art quality henna and indigo over synthetic dyes and chemical processes, and you can use chemical processes over henna and indigo.



Figure 53: White hair, dyed with henna, dyed with a mix of henna and indigo, and dyed with indigo over henna

Henna is a plant which has a red-orange dye molecule and works in a mildly acidic mix. Indigo is a plant that has a dark blue dye molecule and works in a mildly base mix. If you dye white hair with henna, you'll get a coppery red. If you combine henna and indigo in the same mix, it will dye hair brunette colors. If you dye hair first with henna, rinse it out, and immediately dye over that with indigo, you will get beautiful black results! These colors are permanent. You can safely apply body art quality henna and indigo over synthetic dyes.

Dye hair black using pure body art quality henna and indigo:

You'll need to use both henna and indigo. How much should you use?

- 100g of each will dye short hair.
- 200g of each will dye collar length straight hair.
- 300g of each will dye shoulder length straight hair.
- 500g of each will dye waist length hair.



Wash and dry your hair. You can see here that Jessica has about 2” of blonde roots and the rest of her hair has been dyed black with para-phenylenediamine synthetic dyes. Prepare the henna as on pages 25 - 26.



Figure 54: Jessica's blonde roots and synthetic black dye

Wash your hair and dry it. Comb your hair so you can section it easily.



Figure 55: Apply the henna THICK to sectioned hair



Put on gloves! All this will stain your hands! Apply the henna thick into sectioned hair. It is important to get a thick coating on every hair, clear down to the scalp. Henna and indigo will not hurt your scalp or your body.



Figure 56: Comb more hair down over the henna, and apply more.



Figure 57: Keep sectioning hair and applying henna until all the hair is thickly covered.

When the hair is completely covered, wipe off the hairline and ears. Wrap up the hennaed hair in plastic wrap and relax for two to four hours. If you are trying to cover stubborn gray, or have dye-resistant hair,

41



you may need to keep the henna on your hair longer, even overnight. Rinse all the henna out of the hair and towel dry.



Figure 58: The henna dyed the roots red.

When all the henna is rinsed out, and the hair is dry, mix up the indigo.

Mix indigo powder with water to the consistency of yoghurt. If you suspect your tap water has minerals or chemicals added, use distilled water. If you think you might have dye-resistant hair, throw in a teaspoon of salt. Put the indigo immediately into your hair. Do not wait for dye release from indigo.



Figure 59: Smear the indigo paste into the hair, right down to the scalp.



Section the hair and smear the indigo mix thick down right to the scalp. Wrap shoulders with a towel, and tarp the floor. Smear it in thick. This is sloppy, but it really works. Indigo paste has a grainy texture and is more difficult to get into the hair than henna. I just grab handfuls of paste and rub it into the hair.



Figure 60: Keep adding indigo to sectioned hair



Figure 61: Section and smear in indigo paste until all the hair is thick with indigo. Then, wrap hair with plastic wrap



When all the hair is sectioned, and thickly smeared with indigo paste, wrap the hair with plastic wrap, wipe the indigo off the skin, and rest for 1 hour. Rinse the indigo out of your hair.



Figure 62: Jessica's hair after the indigo is rinsed out: both the blonde roots and chemical dye areas are covered evenly

If you see a greenish tone, don't panic. It will go away in a day or two as the indigo oxidizes. Your hair will take two days to settle into the true color. Sometimes gray hair is resistant to dye, and you may have to do this more than once, or leave the henna and indigo on longer.

Some people find that their hair is reddish after a few weeks, because the indigo is fading. This is because the indigo dye molecule doesn't bind the same way as henna does. Indigo dyes your jeans and they fade, too. You can perk up the black between times by making a mix of 10% henna and 90% indigo.

If you like, you can do the roots only a few times between full hair applications.

Don't use indigo alone to dye your hair unless you want to be a "little old blue-haired lady".





Figure 63: Black can be beautiful like a silky kitten ... and SAFE with henna and indigo!

45



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 Use laboratory certified body art quality henna, indigo, and cassia from www.mehandi.com
 HELP DESK AND ORDER DESK: CALL 330-673-0600 or Toll-Free 1-855-MEHANDI

Chapter 7: How do henna and indigo dye gray and other hair colors?

Everybody has a different color of hair, different diet, and different environmental circumstances. Henna will be different on everyone. The following image shows henna and indigo mixes tested on churro sheep of different colors. Churro sheep have a natural color range similar to graying human hair. Henna and indigo results on colored churro sheep are similar to henna and indigo results on differently colored human hair. This is intended as a theoretical guide to potential results, not a guarantee of results.

People have different hair colors and textures. Every person's hair reacts a bit differently to henna. Though top quality hennas are very similar, you may find one suits you better than another. These are plants, growing in different soils, under different conditions. You'll have to try a few things to find out what you like best.



Figure 64: These are the sheep of color, with different proportions of gray hair.

From left to right, these sheep are

- 1) natural white
- 2) dark blonde that is about 50% gray,
- 3) medium brown that is about 20% gray
- 4) dark brown that is about 10% gray,
- 5) black that is about 10% gray
- 6) black that is about 80% gray

Henna and indigo stain the outer keratin sheath of your hair. They do not change the melanin color in the core of your hair. The color of your dyed hair will be a combination of the stain and your natural color. If you dye graying hair, the stain will be different on the pigmented and gray hair. These pictures show how different the results will be when the same mix is applied to different colors of hair.

46



Gray is often difficult to dye because non-pigmented hair has faster and more robust growth than pigmented hair. Henna and indigo will dye gray hair. Some people need to dye their hair more than once to get the coverage they want. Others improve coverage by adding half a teaspoon of salt per 100g of indigo. You can touch up the roots with henna and indigo as often as you like, because these will not harm you or your hair.



Figure 65: The sheep of color dyed with henna only.

In the image above, each of the sheep was dyed with the same henna at the same time. The blonde sheep became redheads. The henna dyed all of the gray hair coppery red. The henna didn't significantly change the dark brown and black hair, but did make it a warmer color with red highlights.



Figure 66: The sheep of color dyed with half henna and half indigo.

In the image above, each of the sheep was dyed with a mixture of half henna and half indigo. The henna and indigo dyed the gray hair medium brown. The henna and indigo changed the dark brown and black



hair a little and gave it warm highlights. The gray and brown were blended so that the gray wasn't very visible.



Figure 67: The sheep of color with one part henna and two parts indigo

In the image above, each of the sheep was dyed with a mixture of one part henna and two parts indigo. The blonde and gray hair became medium cool brown, and the dark hair became darker and cooler colored. All the hair became a darker brown than the previous mix. The result for each sheep was different.



Figure 68: The sheep of color dyed first with henna and then with indigo

In the image above, the sheep were dyed first with henna, then with indigo. All were some tone of black and grays were well covered, though the color of black varied according to the different hair colors.

Repeated applications of henna and indigo saturate the hair with more color.





Figure 69: The sheep of color dyed with indigo only.

In the image above, all of the sheep were dyed with indigo only. The resulting colors were harsh, would look very unnatural as human hair, and the texture was not as silky as mixes with henna.



Figure 70: Always test your hair first!

As you can see from the sheep of color, results vary according to the underlying hair color. If you're thinking of dyeing your hair with henna and indigo, get some samples first. Collect hair from your hairbrush. Make up some of the henna and indigo mix you think might work, and push your hair down into



that mix. Leave it a few hours and rinse it out. Do tests like this until you get a result you like before you henna all your hair! Everyone's results are slightly different!

Chapter 8: What is Cassia?

Cassia powder looks very much like henna powder, and is an excellent conditioner which makes hair glossy and thick, with a healthy scalp. If you mix cassia with water and use it within the hour, the color of your hair will not change, but the texture will be sleek, healthy and glossy. Cassia can be used directly over bleached blonde hair to repair chemical damage.

Cassia obovata, angustifolia and alata have high levels of anthraquinones and chrysophanic acid, and are very effective inhibitors of skin fungus, mite infestations, bacterial and microbial diseases. Cassia alata, which has high levels of anthraquinones and chrysophanic acid, has been traditionally used to treat eczema, itching and skin infections in humans. The cassias with high levels of anthraquinones and chrysophanic acid are genuinely effective in promoting healthy conditions of skin and hair.



Figure 71: Cassia, lemon, henna and hair

The chrysophanic acid molecule has a golden color and can dye hair in the same way as henna. If you mix cassia and lemon juice, and let it rest for 12 hours (as seen on pages 22-23), the golden chrysophanic acid molecule will be released. If you put lemon/cassia paste on non-pigmented hair (number 1 in figure 71) and leave it several hours, it will leave a gentle golden stain (number 2 in figure 71). Cassia can be used to make drab blonde hair golden again. If you mix a spoonful of henna into 100 g cassia, you can make a



warm golden or strawberry blonde color (number 3 in figure 71). It doesn't take much henna to overwhelm the cassia; number 3 is only one teaspoon of henna in 100g of cassia, and number 4 is henna only.

This will show up only the palest blondes and grays, not on darker hair. You cannot make dark hair blonde with cassia.

If you have very hard water, the minerals may react with cassia and turn green, brown or even black. If you think you have hard water, then test first! Rainwash from mehandi.com can remove mineral buildup from your hair for better results.

Chapter 9: Things to Remember:

Body art quality henna is just natural dried, powdered plant leaves. Henna is not a chemical; it is a little tree that grows in the desert. Farmers in arid regions grow henna, it keeps farmland sheltered from the desert, and henna money helps farmers keep their farms and families when other crops are lost to drought.

There is no “black henna,” “neutral henna,” “blonde henna,” “brown henna,” or any other color of henna than what comes naturally from the red-orange dye molecule in henna, lawsonia inermis. You can make those other colors by blending in indigo and cassia, which are two other plants.

Forget what you've heard about henna causing “fried hair,” “buildup,” “coating the hair and “creating unnatural color.” Those are problems caused by the metals and chemicals added to compound henna. Henna is GOOD for your hair! Henna strengthens the hair, knocks out dandruff, and protects your hair from UV damage. Henna makes your hair healthy, heavy, beautiful and silky. Body art quality henna does it best!

Use only independent laboratory tested and certified pure body art quality henna, indigo, and cassia, imported fresh by a knowledgeable supplier. I'm doing my PhD dissertation on henna. I am a knowledgeable supplier. I send every shipment of henna, indigo, cassia and amla to an independent laboratory for certification. The henna in shops is rarely good, usually sandy and stale, and it's often adulterated with unlisted ingredients, including para-phenylenediamine. Once you try the good stuff, you'll never go back to the cheap substitutes again.

If you get itching and blistering every time you use synthetic hair dye, stop using it NOW. The allergy will get worse and can be life-threatening. Use body art quality henna. Body art quality henna has no para-phenylenediamine, no metallic salts, no ammonia, and no peroxide. It's just dried smashed plant leaves. However, everyone is allergic to something and there is nothing that someone's not allergic to. A patch test is a good thing.

You can use body art quality henna over synthetic dyes and you can use synthetic dyes over body art quality henna. The metallic compounds in compound hennas will react disastrously with the activators in synthetic dye. Body art quality henna does not have those metallic compounds, so there will be no problem. However, the results may be unpredictable, so test first! Bleaching over indigo mixes won't harm your hair, but it may turn it a regrettable shade of green.

If you ever had a ‘black henna’ temporary tattoo, there is a very good chance that you are allergic to black hair dye. Artists paint high concentrations of para-phenylenediamine on to skin to create black henna

51



temporary tattoos, and para-phenylenediamine is in virtually all permanent oxidative hair dyes. If you had a black henna temporary tattoo as a child, and had any itchy reaction, it will be very dangerous for you to use chemical hair dye as an adult. It will be safe for you to use laboratory certified henna on your hair.



Figure 72: Test spare hair before you commit to dyeing all of your hair

Always test your hair first. Henna results vary according to the underlying hair color. If you're thinking of dyeing your hair with henna and indigo, get some samples first. Collect hair from your hairbrush. Make up some of the henna and indigo mix you think might work, and push your hair down into that mix. Leave it a few hours and rinse it out. Do tests like this until you get a result you like before you henna all your hair! Everyone's results are slightly different!

Learn more and ask questions at hennaforhair.com! There's a forum there with nice people to talk to, and there are hundreds of pictures and stories from people who have hennaed their hair.

This is NOT difficult. Measurements and times can be very approximate. Women have hennaed their hair for at least five thousand years and they didn't have measuring cups and textbooks. Just go ahead and test a few things and do it.

Men use henna too. Henna cleans up dandruff. Henna can brighten up a graying blonde beard to Viking red. Henna and indigo can cover the gray in Brunette and black beards. An old ski mask keeps the henna paste warm and moist in a beard long enough to get a rich, thorough stain. Henna clears up athlete's foot too!

You can save your leftover powder and paste. Keep your extra henna powder tightly sealed in your freezer. It will stay fresh for a year. Keep your extra henna paste tightly sealed in your freezer. It will stay fresh for a year. Do not freeze indigo or indigo paste. Keep indigo powder sealed, in a dark drawer or cupboard. It will stay fresh for a year. Indigo paste begins to demise ½ hour after you make it. Throw that away. Don't save indigo paste or henna/indigo pastes. Keep your cassia sealed, in a dark drawer or cupboard.





Figure 73: White latex gloves after applying henna

Always wear gloves! Henna and indigo will stain your skin. The easiest way to get henna into your hair is to work it in with your hands. That gives you a nice scalp massage, too.



Figure 74: Thicker is better

Always apply henna THICK. Don't even dream of using a tinting brush. Put henna in your hair like you're frosting a cake.

Lemon juice may be too harsh for your scalp or hair. If your hair seems dry, or your skin seems itchy, change to half lemon half water, or orange juice. If you suspect that your tap water has chemicals and minerals in it, use distilled water. You can use herb tea with lemon, other fruit juices ... any clear sour liquid will do nicely.





Figure 75: Section your hair in 1/2" sections.

Section your hair into rows no more than ½ inch wide. Henna does not drip through your hair. You have to get every hair thickly coated with henna.

Always wait three days to evaluate your hair color. Both henna and indigo undergo a chemical change when in contact with the air. The color deepens and mellows. Do not panic when you rinse your hair.

This is very messy. Cover your clothes with a big towel, and put newspapers on the floor. This is thick goop, and it can go flying. If henna and indigo stain something, launder with bleach to knock out the stain.

How much should you use?

- 100g will dye short hair.
- 200g will dye collar length straight hair.
- 300g will dye shoulder length straight hair.
- 500g will dye waist length hair.

Do not add oil or eggs to your mix. Those will hinder the dye uptake.

You can apply henna as often as you want. It's GOOD for you!

Chapter 10: How do you do this in a hair salon?

One of the reasons henna has been in steady decline for 75 years in salons is that it didn't "fit" the salon setting very well. Henna instructions in cosmetology manuals from the 1940's were that henna was to be heated in a double boiler then applied hot the poor clients head. Presumably, this was to "hurry up" the dye release process. If you mix your favorite henna the night before your appointment, you can take it to your beautician, with this booklet in hand, and simply say, "Do this, please". Bring a spatula to put in the henna, because a tinting brush isn't going to do the job. Henna is messy, so spread something on the floor to catch any slop. Your beautician can do the sectioning, application, and wrapping. Then, enjoy some of the other salon services for a few hours while the henna penetrates your hair, or go on home, and rinse your hair there.



If a cosmetologist wants to keep henna on hand ready to use, henna can be mixed weeks ahead and frozen in baggies at the salon, then retrieved and warmed quickly in a basin of warm water when a client comes in. Indigo can be mixed on the spot. Salons can order bulk supplies of pure body art quality henna and indigo at a discount from <http://www.mehandi.com>. At this writing, the ONLY independent laboratory certified pure body art quality henna store is Ancient Sunrise®, available only from <http://www.mehandi.com>. If henna is NOT certified by an independent laboratory, you really have no clue what you've got, and what unlisted additives might cross-react with chemical hair dye activators.

Chapter 11: Catherine Cartwright-Jones's Quick Mix Chart

If your hair is:	Use Cassia	Use ½ cassia and ½ henna	Use Henna	Use 2/3 henna and 1/3 indigo	Use ½ henna and ½ indigo	Use 1/3 henna and 2/3 indigo	Use Henna first, then indigo
Blonde	Glossy blonde	Strawberry blonde	Vivid red	Light brown	Medium brown	Darker brown	Black, though it make take more than one try to get complete black.
Dark Blonde	Glossy dark blonde	Coppery red	Vibrant red	Light brown	Medium brown	Darker brown, though it may take more than one application to get it really dark.	Black, though it make take more than one try to get complete black.
Red	Glossy red	Warm red	Vibrant red	Reddish brown	Medium brown	Darker brown, though it may take more than one application to get it really dark.	Black, though it make take more than one try to get complete black.
Medium Brown	Glossy medium brown	Red highlights	Auburn	Medium Brown	Medium brown	Dark brown	Blue-black
Dark Brown	Glossy dark brown	Red highlights	Dark Auburn	Dark Brown	Warm brown	Dark brown	Blue-black
Black	Glossy black	Slight red highlights	Black with red shimmer	Warm Black	Warm black	Warm black	Blue-black
Gray	Gray	Golden copper	Coppery red	Light brown	Medium brown, though it may take more than one application to get full color.	Dark brown, though it may take more than one application to get full color.	Black, though it make take more than one application to get full color

55



Chapter 12: Henna will cure head lice, dandruff, and ringworm.

Henna is a safe and effective cure for head lice, dandruff and ringworm. Henna combined with Fenugreek will kill head lice in resistant infestations. Henna combined with Artemisia will completely eradicate head lice, even in severe infestations. Prepare henna to eradicate headlice, dandruff, or ringworm the way you normally prepare henna. For difficult infestations, add 25g of artemisia or fenugreek per 100g of henna. Use body art quality henna (high dye content, with no impurities or adulterants. Do not use Artemisia on pregnant or nursing women.

M. El-Basheir and Mahmoud A. H. Fouad (2002) A Preliminary Pilot survey on Head Lice, Pediculosis in Sharkia Governate and Treatment of Lice with Natural Plant Extracts. Journal of the Egyptian Society of Parasitology, Vol 32, No 3, December 2002, Zeinab

Henna will cure ringworm! Ringworm is a fungal infestation and henna is anti-fungal.

Bosoglu A., Birdane F., and Solmaz H., (1998) "The Effect of Henna Paste in Ringworm in Calves Department of Internal Medicine, Faculty of Veterinary Medicine, Selcuk University, Konya, Turkiye Indian Veterinary Journal 75, January

Ringworm at Wikipedia: <http://en.wikipedia.org/wiki/Ringworm>

Henna can cure dandruff! Dandruff is the result of a fungal infestation, psoriasis, dermatitis, or flaking skin. Henna is anti-fungal, can be effective against psoriasis, and can strengthen skin. Many people who have itching, flaking scalps after dying with chemical dyes are developing an allergy to para-phenylenediamine and other chemicals. Henna can be used to dye hair instead of chemicals, and can restore healthy hair and skin.

Wikipedia on Dandruff: <http://en.wikipedia.org/wiki/Dandruff>

Though you can generally assume that it is safe to henna a healthy female over the age of 12, do not henna a child or infant's hair without first consulting your physician to determine the child has Glucose-6-phosphate dehydrogenase deficiency (G6PD deficiency) deficiency.

Do not use henna on any juvenile who has G6PD deficiency. G6PD deficiency is an X-linked recessive hereditary disease featuring abnormally low levels of the G6PD enzyme, which plays an important role in red blood cell function. Individuals with the disease may exhibit nonimmune hemolytic anemia in response to a number of causes, and one of these is causes is exposure to henna. Males are more likely to be harmed than females. G6PD deficiency can be determined by a simple blood test administered by your physician.

Wikipedia article on G6PD deficiency: http://en.wikipedia.org/wiki/Glucose-6-phosphate_dehydrogenase_deficiency



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What's New from Henna for Hair?



Ancient Sunrise® Laboratory Certified Henna from mehandi.com

When I wrote this book, it was absolutely clear that there are no legal requirements for declaration of ingredients in boxes marked “henna” in most countries of origin. As you can see in this book, henna is often contaminated and adulterated, and the purchaser rarely has any way to find out what they might be putting on their hair. The designation of ‘Body Art Quality’ set pure henna apart from ‘Compound Henna’. Mehandi.com made certain that all their henna was body art quality, and the business grew as people learned to henna their hair successfully.

The second step in this process was to find out the finer characteristics of henna, such as dye content, pesticide levels, and lead. This can only be determined by laboratory testing. Most of the agricultural products that we consume, such as milk, eggs, grain, and meat, are laboratory tested for such things as pesticide content, lead, and protein content, as well as adulterants and additives. As of 2009, Mehandi.com started sending all new shipments of henna to an independent laboratory for certification of dye content, pesticide assay, and lead content, as well as checking for adulterants and contaminants. We developed this new line as Ancient Sunrise®. To date, we are the ONLY henna seller who can tell you PRECISELY what the lawsone content of our henna is. We are the ONLY henna seller who tests for pesticides, lead, para-phenylenediamine and other contaminants and additives. If you have read this book, you will understand why this is important!

Questions and Answers about laboratory tested henna: an interview with Catherine Cartwright-Jones

Q. Why did you start doing chemical tests on henna?

A. Part of my PhD dissertation research involves testing fifty different brands of henna, available from shops and online, for lawsone content, contaminants, adulterants and heavy metals. I'm doing sequential tests of known hennas from several suppliers to find the range of variation within a processing season. I'm also doing comparative tests from other suppliers to determine the variability of processing, plant types, pesticide levels, adulterants and contaminants. This will be in conjunction with a discourse analysis of advertising claims.

58



Another, more important reason for testing is that I've been asked to be a consultant on a research project at a major US medical school that is running clinical trials on possible therapeutic and pharmaceutical uses for henna. I can't publish the name of the school yet because their research project is still at an early stage and they're not ready to publish their results. However, the preliminary tests have been positive and if the trials are successful, this could be a major step toward gaining approval from the US Food and Drug Administration for topical use of henna (direct application on human skin) in the US.

Both the medical school project and my dissertation have to meet requirements set by the respective university's Institutional Review Boards (IRB). The IRB cooperates with the USFDA to set standards for human trials in academic and medical research. The IRBs must file reports from an accredited laboratory on tests performed on the hennas to be used in the tests before any human testing is done. Those tests must meet federal health and safety standards.

Q. When did you start testing your henna?

A. We began testing shipments of one metric ton or more in the last quarter of 2008. Not every batch we have on hand is tested. All the laboratory-tested batches must be individually identifiable. This means we have to maintain strict lot controls, so some shipments won't be tested because for one reason or other, we can't be certain that all the henna is from the same production run or a shipment got scrambled in transit or in the warehouse.

Q. Where do you get your henna?

A. Our hennas come from India, Pakistan and Yemen, through some of the same exporters that other US henna sellers deal with. The one difference is that we buy up to ten metric tons of henna a year so we are able to order henna in bulk, unpackaged lots and sell it under our "house brand" names, depending on each henna's mixing and staining qualities and, in the case of laboratory-tested batches, the lawsone content.

For my dissertation research, we test multiple batches from each distributor to build up profiles of different henna sources. The multiple tests show the differences and similarities between different distributors, different crops and even differences within the same crop. The laboratory tests are also a good indicator of the degree of pesticide drift from nearby crops. Henna rarely needs any spraying, but cotton and other crops in the region are often sprayed with high levels of pesticides forbidden on plants that would be used for human consumption. Wind drift and runoff from fields treated with pesticides could affect a nearby henna crop. So far, every batch we have tested has been shown to be absolutely unique, with a different chemical profile than any other batch.

Other people may claim that they have the identical henna that we do. The only way they could prove that their henna is identical to ours would be for them to send their henna to a lab and come up with identical results. If they haven't proven that with independent laboratory testing, don't assume that their henna is the same.

Q. How is your henna tested?

A. We send samples of henna shipments to Alkemists Pharmaceuticals, an independent laboratory, recommended by the university medical school conducting the tests on therapeutic uses of henna. Alkemists tests each sample for lawsone content, pesticides, lead and other adulterants and contaminants.

The actual test is a standard lab procedure known as "high-performance liquid chromatography" (HPLC). HPLC separates a test sample into its chemical components so the individual components can be separately



measured. The Alkemists laboratory's testing curve is precise to 10 parts per million or better. This is standard precision for a laboratory that performs tests on foods, food supplements and drugs.

For my dissertation research, the laboratory tests are required by the Institutional Review Board (IRB) at Kent State University. Colleges and universities in the US receiving research funds from the Department of Health and Human Services are required to have an IRB for, among other reasons, maintaining standards for any testing involving human subjects.

Laboratory testing is also required for materials intended for pharmaceutical use. We are now supplying henna from our tested batches to the university medical school for their research in medical uses of henna.

Other people may claim to have "laboratory certified henna", but if they cannot report the exact lawsone content, the pesticide levels, the lead level, and contaminants or adulterants, their test has been only cursory and is insufficient for pharmaceutical use. A cursory tests doesn't tell you, the consumer, anything useful about what you are buying.

Alkemists Pharmaceuticals holds the rights and maintains control of the reports on all their laboratory tests, but anyone who would like to see a copy of the test report can contact Alkemists Pharmaceuticals, who will arrange to send a copy of the report which includes details on their testing methodology.

Q. Why are you selling the laboratory-tested henna?

A. The simplest and most obvious answer is that I need to recover to cost of having the hennas tested. Initial setup and testing protocol design at the lab are expensive and each subsequent batch test costs several hundred dollars. The tested lots are about three metric tons each, more than the medical school or I will use for research, but there is a demand for the tested product among Mehandi.com's customers.

Mehandi.com's core business is henna for hair and many of Mehandi's customers have chemical sensitivities or allergies, often resulting from using conventional commercial hair dyes and they can no longer use those dyes because of health concerns. We also have nursing mothers, cancer survivors and others among our clients who are concerned about pesticides and lead. Our staff frequently answers some variation on the question "What's in this stuff?" The only way to give a certain and consistent answer to that question is to have the henna assayed so we have a hard-copy record from a certified lab saying exactly what's in each tested batch we have in the warehouse.

Catherine Cartwright-Jones 2010

60

