

HYDROSOLS OR DISTILLATION WATERS

THEIR PRODUCTION, SAFETY, EFFICACY AND THE SALES HYPE.

By Martin Watt
Slight update 2016 in brown

INTRODUCTION: So called 'hydrosols' or 'hydrolates' were introduced to the aromatherapy world mostly in the late 1990s. Although rose water and orange flower water have been commercially available for a very long time, most of the other hydrosols were not sold. The vast majority of hydrosols still go down the drain as waste water from the distillation process.

PRODUCTION:

The production of hydrosols varies enormously depending on distillation techniques and countries of origin. For example, in the large production units such as in Turkey and Egypt, the plant material is distilled in closed equipment. The hydrosols never see the light of day and atmospheric contamination is unlikely. In addition, the heat of distillation will pasteurise the water making its immediate use safe.

With small scale 'on-the farm' production, the hydrosols can become contaminated by the atmosphere or by the unhygienic conditions in which many stills are located. It is common to see barrels being filled in the open air that previously were stored over filthy drainage channels or in dirty barns.

With essential oils contamination is unlikely to be a problem due to their general inability to support most bacterial or fungal growth. However, with distillation waters this is another matter as **hydrosols make an ideal growth medium for bacteria and fungi. See reference at the foot.**

Subsequent bottling can turn a contaminated hydrosol into a safe one. For example, they can be pasteurised in the same way as drinks or milk, or they can be finely filtered to remove organisms and other contaminants. This is all fine if the hydrosol is kept in a sealed bottle, but once opened they can quickly become contaminated again and the greatest care must be taken to avoid this. To prevent this contamination causing a health problem, larger commercial suppliers will add a preservative. The preservatives are often the same as those commonly used in foods. This idea goes against those who say they "must have a 100% natural product", but in reality, many hydrosols do contain a preservative without it being declared. Thank goodness they do as 'natural' does not equal safe.

There are other methods used to produce what is called a hydrosol or distillation water, **but which are not genuine.** They can be home-produced simply by making an infusion of the herb, filtering it and selling it as a hydrosol. They can be produced from freeze dried herbal extracts reconstituted with water (common). This may even be done in the country of origin making detection difficult. They can be made by dissolving some essential oil in water by using a surfactant to permit the oils emulsification. Finally, in some cases, they can be a synthetic perfume compound added to water. This is not uncommon with rosewater sold in pharmacies, or beauty shops.

Methods have now been developed to allow more complete extraction of the components in the distillation waters. The concentrated extract from the still water is then added back to the stills during a first distillation or re-distillation to increase the overall percentage of essential oil recovered. After the initial still waters have been extracted by this new method, the final water is almost pure tap water and is too free of volatile elements to be sold. These new techniques may in time reduce the availability of genuine hydrosols and increase their artificial production as above.

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SAFETY AND TOXICITY ISSUES:

MICROBIAL CONTAMINATION:

The biggest hazard from using hydrosols is their potential bacterial contamination. When the product is just used on the skin, this may not cause problems as long as the bacteria can't get into the mouth. However, some dangerously incompetent authors and therapists advocate their internal consumption. If the product being used has not been properly preserved or processed then **this represents a significant health hazard.** [See reference at the foot.](#)

November 2008 update: To confirm the above, I have seen a copy of microbial testing done by a professional lab on Sandalwood hydrosol. Extracts of that report are reproduced here courtesy of Butch Owen of <http://www.av-at.com> He had his hydrosols tested every 90 days and always tested what bulk suppliers were offering to him.

The results of those tests are horrifying, the Sandalwood hydrosol that was being offered had a total plate count of 22,000,000, compared to a total for Lavender USA of just 10, Turkish rose 4 and US Melissa 1.

The Ohio State standard for bottled drinking water is a plate count of bacteria no higher than 500 parts per million in a 100 ml test sample.

What the bugs in the Sandalwood were is not known, but it proved how badly contaminated some hydrosols can be. It also shows how those who advocate the internal use of hydrosols that have not been tested for contamination are playing with fire, and **how easily a disease epidemic could be triggered by a trade that claims to aid peoples health.**

For those who wish to check the hazards associated with bottled waters below is some essential reading. <http://www.nrdc.org/water/drinking/bw/bwinx.asp>

The above reports contain information on the contamination that has been found in ordinary bottled waters. In one survey of 103 brands up to a third of samples were contaminated. Cryptosporidium, Giardia and other cysts have been found and these led to 4000 people being hospitalised. Dateline NBC, September, 1994. The NRDC'S study of water found many different kinds of bacteria capable of causing illness.

You may be thinking "what has this got to do with hydrosols"? Well **most hydrosols are mainly water** with minute traces of a variety of plant chemicals. Rarely are those plant chemicals occurring at a high enough level to inhibit bacterial or fungal growth, despite the hype.

TOXICITY:

Several people have raised the issue of toxicological effects of hydrosols. This really is unrealistic because many of the herbs from which hydrosols are made are permitted food additives. With most of the commonly available hydrosols one would need to drink the stuff by the gallon for days to even come anywhere near a toxic dose. That even holds good for animals who might lick it off their coats. If hydrosols were toxic then so is a cup of tea or coffee, most canned fruit drinks and many human and animals foods that contain herbs and essential oils. Also, many herbs that hydrosols are made from, have known toxicology from tests done on mice and rats by food safety advisors such as the World Health Organisation.

There is only one hydrosol that I have seen to date which I would be concerned about in this respect and that is Calamus. This herb has many question marks over its potential carcinogenicity, therefore I would not advocate its use. **I would also suspect that anyone who does advocate its use has had no formal training in modern herbal medicine or safety issues.** Beware of aromatherapy type authors on these issues!

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THE LAW:

Most products intended for retail sale for human or animal consumption come under food safety laws and veterinary medicine laws. Hydrosols seem to be slipping through this safety net which would not matter if they were just being used as cosmetic products. However, increasingly people are being advised by quack practitioners to drink them for medical conditions, or being advised to give them orally to animals

I would strongly advise any aromatherapist to check their insurance position on this. Many aromatherapy policies do not permit the therapist to practice herbal medicine. If you advise someone in a professional setting to consume a hydrosol for a medical reason, **then you are practising as a herbalist**. In some countries that would also classify you as an "unlicensed medical practitioner".

HOW DO I KNOW IF WHAT I AM BUYING IS SAFE?

The only way you can hope to find out is to ask the supplier pertinent questions (as follows), and do not believe woolly or misleading marketing hype.

1. Does this hydrosol contain a preservative? If the answer is a categorical "no" then see next.
2. Do you have any **evidence** that this product has been tested for microbial contamination?
3. Can I see copies of test results?
4. Where is the product bottled, i.e. by the distiller or later in the supply chain?
5. Do you repack the hydrosol from bulk barrels or other bulk storage?
6. Do you produce it yourself? If so how is it stored and how do you ensure it is not contaminated?
7. If you advocate its consumption have you been certified as a food preparation premises?

WHAT TO BE WARY OF:

Some hydrosols can be very useful for a limited range of ailments. For example, rose, chamomile, lavender, neroli, and a few others can make wonderfully cooling applications for a variety of **skin problems**. Indeed in some cases they are better than the same plants essential oil. However, unlike with essential oils, there is hardly any research base behind such uses. It is mainly traditional information and how accurate that information is depends on the depth of knowledge of the person advocating its use. Herbalists in the past rarely used hydrosols because they preferred to use herbal teas or decoctions which (when freshly prepared) were not contaminated by microbes. Therefore, there is very little information to be found on hydrosols in good books on herbal medicine. When in certain societies they did use hydrosols, you should always remember **they used the fresh product**. They did not use it from a bottle that had been shipped round the world with the time and conditions suitable for microbial growth (unless a preservative is used).

Beware of hydrosols made from plants on which there is no safety data on their essential oils. For example, verbenone type rosemary, ravensara, thyme chemotypes, etc. Also beware of hydrosols made from plants with known dangers, for example the sensitisation reactions associated with fresh Verbena and Yarrow. These hydrosols may be safe on the skin but I am not aware of any formal testing having been done.

Traditional healers rarely used hydrosols because they did not - with a few exceptions - undertake distillation. So one has to ask where all this information entering the market in recent years came from? The simple answer is a typical one for aromatherapy: The suggested uses are frequently based on how teas and suchlike were and still are used by herbalists. **Also, in many cases, the uses have simply been invented by certain aromatherapy authors.**

I have to add something very important here. Please never forget that very few aromatherapists are trained in physical diagnosis, in the medical sciences or in herbal medicine. Therefore, the aromatherapists advocating the use of hydrosols can make some enormous blunders on what they write about and teach. Some of the claims on web sites are outrageously misleading and are often illegal under their countries own laws. Canada is particularly bad in this respect.

Beware of those who make references to uses based on the books of certain French aromatherapy authors. With one book in particular, the information is not properly referenced and it is known some of the text was not written by the claimed authors, but rather by editors. Therefore, medicinal claims made in such a book should be viewed with the utmost scepticism. One web site in Canada is using information from this book and the site owner is being promoted as "a world leader on the subject", in reality far from the truth.

Never accept the following statements without any evidence of their truthfulness. What follows and other answers are just hype and lies designed to mislead.

- "I have been selling this for 20 years and never had a problem".
- "I am a leading authority on the use of hydrosols",
- "such and such teacher says",
- "I am working with 4 chemists around the world",

Other hype:

"They are like homeopathic essential oils".

No, this is complete hogwash. Anyone that says this must be totally ignorant of homeopathy. To be homeopathic the preparation **MUST** be manufactured in a specific manner and hydrosols are not done like that.

"Homeopathic flower remedies use alcohol as a preservative"

Yes, they do, but the alcohol is around 60% and thus an effective preservative. Also, one only gives a few drops at a time, and see below.

"Adding a little grain alcohol acts as a preservative".

Again hogwash. Such a statement proves the person saying it has absolutely no knowledge of what is required of a preservative. It takes at least 25% alcohol by volume to inhibit most (but not all) micro-organisms. Therefore, if you add a couple of teaspoons of alcohol to a pint of hydrolate **all it will do is make the bugs merry!**

SO ARE HYDROSOLS OF ANY USE AT ALL?

Yes, they can be if they are properly treated to ensure no contamination. They can be very good for treating most kinds of skin inflammation. Rosewater in particular is wonderful for that. They can be excellent cosmetic agents for treating things like overactive sebum production. Some can be great for subduing the inflammation of acne and similar conditions. Some are the ideal solution to sore eyes or minor conjunctival infections. They can be an ideal cooling application for nipple soreness from early breastfeeding, as they can for soothing external vaginal damage from childbirth. There are many other examples involving damaged skin that they are ideal for, **but only if the product can be proven to be bug free.**

Would I drink them? No I would not. If I wanted a herbal preparation I would rather make a fresh herbal tea which contains far more of the herbs active constituents than most hydrosols.

Finally:

I would advise anyone who wants to take a training course in the use of hydrosols to be most cautious about the qualifications declared by the teacher. As I said above, few if any aromatherapists or authors on this subject have had any formal training in herbal medicine. Also of the few that claim they have, the quality of their own training is open to debate. If the advocated uses are just cosmetic there is less of a problem. However, if the suggested uses are medical in

nature then this is a very dangerous minefield to enter, and without training in herbal medicine such treatments in unskilled hands amount to quackery.

A newer research reference on the contamination of Hydrosols:

Food Research International. Volume 76, Part 3, October 2015, Pages 576-586

“Observed essential oil concentrations do not prevent microbial growth and spoilage”.

“Hydrosols are subjected to microbial proliferation”.

“EO concentrations in hydrosols or cold storage are not sufficient to insure microbiological stability”.

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