

# How Do Chemicals that are Absorbed Into The Skin Get Into The Blood Stream?

The last blog post dealt with the basic concept of dermal absorption. Now, we will explain in more detail how chemicals are actually absorbed into the skin, and how they travel around the body. These concepts will help explain why dermal absorption is so effective. Our skin is not as impassable (or impermeable) as we think it is.

The process of dermal absorption is used by the cosmetics and the medical industry for skin care and health care reasons (to deliver medicines like pain reducers or nicotine replacements). Although, there are benefits of dermal absorption – this method can also deliver harmful chemicals and can pose a huge risk to human health too.

Once in contact with the skin, the chemicals can penetrate the outermost layer of the skin and get trapped between it and other layers of the skin. Gradually, the chemicals seep in further beyond the outer most layers and can enter the blood circulation system. Think about when you pour water on a piece of leather – the water can sit on the surface for a while but eventually it will sink into the leather.

Once in the blood, the chemicals can reach all organs of the body without any hindrance. This process of absorption is what makes chemicals absorbed through skin more harmful than those ingested.

The ingested chemicals are taken to kidneys or liver, where they are broken down by different enzymes, in some cases, rendered harmless or excreted. However, chemicals absorbed by the skin enter directly into the blood stream and can reach any organ without interference.<sup>1</sup>

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<sup>1</sup> Britta Aragon. Toxic Alert: Skin Can Absorb What We Apply to It—Including Cosmetic Chemicals (2009). Cinco Vidas Blog. <http://cincovidas.com/toxic-alert-skin-can-absorb-what-we-apply-to-it%E2%80%94including-cosmetic-chemicals/>. Accessed 7 November 2013.

There are no conclusive studies on exactly how much the skin absorbs as compared to ingestion. However, it is quite clear that through absorption the chemical is most likely to end up in the blood circulation system as opposed to ingestion. Through ingestion (eating or drinking), the chances of the chemical entering the blood stream are not only low but also there are chances that the chemical will be altered or neutralized by the organs like the liver before even getting to the blood stream.

The convenience of dermal absorption gives it a wide variety of applications or uses. This process is used by the cosmetics industry for skin care products. The penetration of chemicals into the skin helps improve the skin condition. An equally popular and important use of absorption is by the medical industry. Many drugs are administered through the skin for health recovery and improvement, like nicotine patches and pain reliever patches. This method is more convenient over ingestion because it helps concentrate the effect on a particular area. Less chemical is required to achieve the desired effect and the resulting concentration that is absorbed is also predictable.

However, the process of absorption is not always effective and not all chemicals are absorbed by the skin and wind up entering into the blood stream. The rate and amount of chemical absorption depends on many factors including the properties of the chemicals and the condition of the exposed part of the skin.

The new researches indicate that many harmful chemicals that are present in the beauty products and also in the plastics of their containers can easily permeate human skin. So, while applying products for skin improvement, we tend to forget the extra chemicals that we are exposing our skin to. The next article will elaborate this point in further detail.