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PERSONAL CARE

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⋮ sensitisation
⋮ in pandemic
⋮ times

⋮ Inclusivity
⋮ by balancing
⋮ epigenetic
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Water Lily Pro – Perfect Volume for Urban Hair

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Water lily flowers are predominately visible above water and are seemingly the most attractive part of the plant. A closer look, however, uncovers that water lilies are exceptional underwater factories of phytochemicals. Their long and branched root system produces a unique combination of phytochemicals – all functional additives for hair care products.

Hence, Lipoid Kosmetik developed Water Lily Pro, an all-natural extract from water lily roots.

Water lily invokes positive associations. Together with its proven efficacy, Water Lily Pro is a powerful ingredient for hair care applications such as pollution protection, taming of frizzy hair and volume optimisation.

A symbol of beauty and purity

Water lily – also known as *Nymphaea alba*, European white water lily, white water rose or white nenuphar – originates from the water and symbolises beauty, purity, and resurrection. Truly, water lilies are famous for their beauty. According to legend, a water lily was once a star that fell from the sky onto the water and changed into a beautiful flower. Water lily's name 'Nymphaea' comes from the Greek word 'nymph' and according to Greek mythology, it symbolises a 'feminine spirit' that lives in water bodies like wells, waterways, and springs. In Hindu and



Buddhist traditions, water lilies are important religious symbols for purity, enlightenment, and resurrection, where beautiful blossoms emerge from the mud. In Chinese culture, water lilies are popular wedding flowers symbolising a

happy marriage that lasts for 100 years. All these associations make water lilies an ideal starting point to create water-based cosmetic concepts.

Exceptional underwater factories of phytochemicals

Water lily is an aquatic plant that lives in temperate and tropical climates around the world. The plant is anchored with perennial rhizomes or rootstocks in the soil with round leaves and flowers floating on the water surface (Figure 1).

A closer look uncovers that water lilies are exceptional underwater factories of phytochemicals. The submerged rootstocks store nutrients in up to 3 m water depth with no access to atmospheric oxygen or UV-light. They experience lower and more constant temperatures and higher pressure. As a result, their long and branched root system produces a unique combination of phytochemicals.

Roots provide functional benefits for hair care

Water lilies originate from the water and convey the concept of water – this association makes water lilies an ideal starting point to create water-based cosmetic concepts, including rinse-off products, for example shampoos or bath products.

Water lily flowers are by far the most attractive part of the plant. However, when looking at phytochemicals, a different picture arises. The roots, especially the thickened root stalks (rhizomes) store saponins, flavonoids, and tannins with potential value for hair care applications: Saponins are natural biosurfactants that provide cleansing and conditioning. They lower the surface tension and increase the wettability of hair, making it more accessible to active ingredients in shampoos and conditioners. Flavonoids are antioxidants that provide protection. They prevent oxidative damage of hair fibres, pigments, and colour. Tannins are keratin enforcers that provide strength. They help to repair damaged hair by crosslinking keratin fibres.

Root extract unites emotional and functional benefits

We argue that water lily flower extract is broadly used because of the flower's emotional, aesthetic appeal, whereas water lily root extract is deliberately used to achieve functional benefits.



Figure 1. Water lilies form beautiful underwater landscapes with submerged root systems. The different parts of the plant produce unique sets of phytochemicals from which the root extract provides the most promising phytochemicals for hair care applications.

Indeed, according to our Mintel database search approximately 1000 cosmetic products with water lily extracts have been launched within the past 20 years. Among them, water lily flower extracts were preferred over root extracts (549 versus 270 releases). In the shampoo category, however, root extracts were predominately used: 91% of shampoos containing water lily were made with root extract. Of note, almost all shampoos with water lily root extract focused on the functional benefit 'hair volume'. This was in stark contrast to shampoos with water lily flower extract that were used for a variety of cosmetic applications mainly focusing on emotional benefits (Figure 2).

This finding motivated us to further investigate water lily root extract and its beneficial properties for the treatment of hair, particularly improving hair volume.

Water Lily Pro – a phytochemical concentrate for hair

Water Lily Pro is a 100% natural, COSMOS-approved, and preservative-free water lily root extract with a maximal content of high-value hair care phytochemicals. It is a powerful ingredient for hair care applications such as:

- **Hair protection in an urban environment:** Hair treated with Water Lily Pro benefitted from low particle adhesion. The hair surface stayed free from deposits and remained intact (not shown). Repelling urban pollution is expected to make hair less vulnerable to chemical damage and maintains a clean, smooth, and healthy hair surface.
- **Improving hair manageability and quality:** Water Lily Pro in a shampoo improved combability and detangling, and, thus, made hair more manageable (not shown). Increased manageability is expected to go hand in hand with increased control of unruly and frizzy hair.
- **Optimising hair volume and definition:** See below and Figure 3.

Water Lily Pro – perfect volume for urban hair

The improving effect of Water Lily Pro on the order and definition of hair was evaluated in a half-head

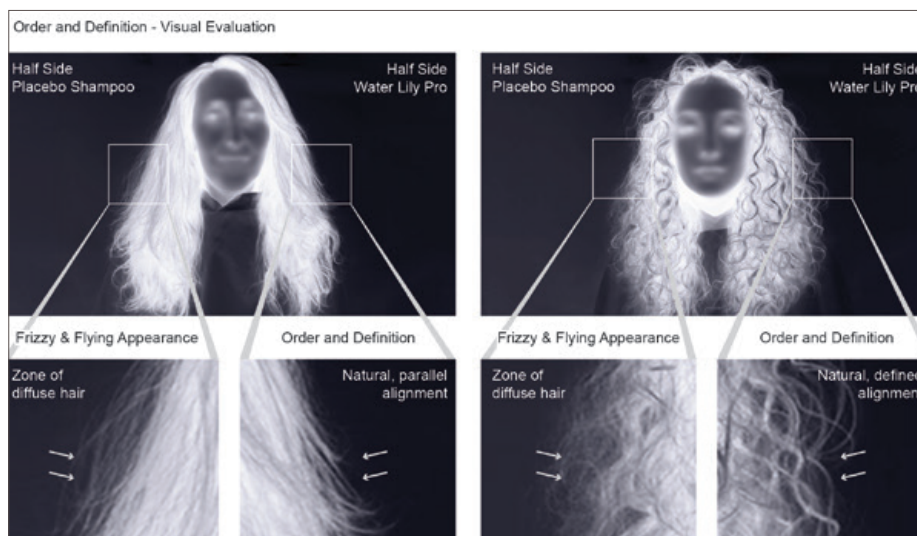


Figure 3. Water Lily Pro gives hair order and definition. Hair treated with Water Lily Pro looks less diffuse, more natural and defined. Representative pictures, n=20.



Figure 2. A market analysis reveals that water lily root extract is preferred in volume shampoos. Flower extracts serve divers marketing claims, building on the positive attributes associated with water lilies. Leaf extracts have only minor use.

test applying a shampoo with 0.5 % Water Lily Pro to one half of the head and a placebo shampoo to the other side of the head. Each side was washed, rinsed and dried according to a standard protocol. The study evaluated hair to hair orientation and alignment that often appears as frizzy, diffuse or flying hair.

The study confirmed that Water Lily Pro optimises the hair volume and definition, in both, straight and curly hair: the shampoo gave hair a more parallel alignment. Order and definition improved significantly. We, thus, conclude that Water Lily Pro helps to tame unruly, frizzy hair. It supports defined volume and, thus, provides the perfect contour-refining finish for premium volume shampoos.

Conclusion

Water lily roots store a unique combination of amphipathic saponins, hair-strengthening tannins, and antioxidant flavonoids, a combination perfectly suited for the daily hair care routine. Water Lily Pro is a water lily root extract with a maximal content of these beneficial hair care phytochemicals. It protects the hair surface from the effects of urban living, increases the overall hair quality and manageability, improves control of unruly, frizzy hair and eventually helps to achieve perfect volume and definition. **PC**

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