

Pro and Contra of Cleansing Conditioners

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Keywords

Hair care · Hair cosmetics · Co-washing

Abstract

The main function of a shampoo is to clean the hair and the scalp. However, overcleansed frizzy hair is not cosmetically acceptable. Alternative methods of cleansing the hair have become popular among the sensitive hair population. “Co-washing” or “conditioner washing” is a method of cleansing the hair with a conditioner without silicones, petrolatum, or mineral oils. Co-washing is gentle to the hair but may lead to buildup due to residues under the cuticle scales. We discuss the pros and contras of the co-washing method in a medical perspective.

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Introduction

Shampoos are the main form of scalp cleaners and have a great influence on the hair and scalp health maintenance and cosmetic appearance [1–3]. There is a great concern about whether frequent shampooing could harm the hair shaft and increase frizz [4–7]. Although there are no data to support that shampoos can harm the hair, some surfactants such as sulfates have been associated with an increase in frizz, hair fragility, and scalp dryness [1–3, 8]. Additionally, alternative methods of cleansing

the hair and scalp with milder detergent called the “low-poo” and “co-washing” method have begun to gain popularity among the sensitive hair population [7–9]. In this study, we discuss the pros and contras of this method in a medical perspective.

Surfactants, Level of Cleanliness, and Hair Damage

Surfactants are the main ingredients of a shampoo. They are detergent molecules which are classified according to the electric charge as either anionic, cationic, amphoteric (zwitterionic), or nonionic (Table 1) [1–3, 10, 11]. The most widely used include lauryl sulfate, ammonium lauryl ether sulfate, and ammonium lauryl sulfate which belongs to the anionic group (group 1) [3, 12]. They strongly remove dirt and sebum from the hair and scalp, but they increase the net negatively charged hair after rinsing and may leave the hair dry [3, 12]. Low-poo shampoos are sulfate-free shampoos. The main surfactants used belong to the amphoteric group (group 4) and have a mild cleansing property. Cocamidopropyl betaine and cocobetaine are the most commonly used [1–3]. Cationic surfactants belong to group 2 and act as positively charged molecules with minimal cleansing potency and may cause buildup on hair [3]. The most used are cetrimonium chloride, polyquaternium [13–15]. Nonionic surfactants belonging to group 3 are conditioning agents with low cleansing properties [13]. Cetyl alcohol is a fatty

Fig. 1. Hair with extreme buildup due to silicone leave-in from products as a consequence of co-washing alone. **a** Oily and dull appearance. **b** Dermatoscopy of the hair shafts shows pseudo-casts and a *plica cosmetica*.



Table 1. Example of co-washing ingredients (note that the surfactant used is cetyl alcohol)

Water, *Cocos nucifera* (coconut), *Citrus reticulata*, cetyl alcohol, cetrimonium chloride, cetearyl alcohol, PEG-40 castor oil, stearalkonium chloride, *Cocos nucifera* (coconut) oil, *Ricinus communis* (castor) seed oil, phytosterols, *Serenoa serrulata* fruit extract, quaternium-18, potassium sorbate, fragrance/perfume, limonene, methylisothiazolinone

alcohol and nonionic surfactant and is the main ingredient of the co-wash shampoos and has very low cleansing properties [13–16].

Shampooing with anionic (sulfate) surfactants that are most prevalently used combined with everyday grooming actions are the usual cause for mechanical hair damage [13, 16–19]. Intercellular lipids can be extracted from the hair during repeated washing with high cleansing detergents [20]. Different scientists have demonstrated that shampooing with anionic surfactants may cause the removal of structural lipids or proteinaceous matter from the hair and leave the intercellular regions more susceptible to rupture [13, 16, 21, 22].

Chemically treated hair and African hair have impaired hydrophobicity and lubrication, a high water intake, and are more prone to breakage. Therefore, the use of regular deep cleansing surfactants may cause hair fiber damage [3, 12, 13, 16, 22]. Adding moisturizers to the shampoos are possible key solutions to preserve a healthy hair structure [3, 8, 12, 16]. These benefits are usually delivered by cationic conditioning polymers and silicones

that are added to the sulfate-based shampoo formulations [16]. However, this combination leads to the deposit of insoluble cationic-anionic complexes inside either the endocuticle or the cell membrane complex, which may also cause hair damage [13] (Fig. 1). It is theoretically possible to avoid the cationic-anionic complex deposition by choosing the co-washing method [2, 3, 13, 14, 16].

Co-Washing as a Solution to Deep Cleansing Surfactants

“Co-washing” or “conditioner washing” is a method of cleansing the hair with conditioner [4, 5, 8]. Originally intended for use by those with naturally curly or textured hair, the co-washing community has since broadened to include many sensitive hair types. Low-poo, no-poo, and co-washing are different concepts. Low-poos are sulfate-free shampoos. The no-poo method refers to different methods of cleansing the hair, such as baking soda, apple cider vinegar, or just water [4–7]. The co-washing method uses a nonionic surfactant, such as cetyl alcohol, as its main surfactant (Table 1) [16]. Co-washing products may also contain cationic surfactants and oils [6, 16]. In theory, it can prevent hair breakage and regain balance of the sebum production by decreasing the overproduction of sebum and dryness that follow the deep cleansing, but there are no scientific data to prove it [4]. The co-washing method involves a mechanical removal of dirt and residues. Before co-washing, the hair should be thoroughly rinsed with water. Furthermore, the co-washing products should be best left on the hair for a few minutes before

Table 2. Pros and contras of the co-washing method

Pros of the co-washing method

- Good for dry, sensitive, overprocessed, and textured hair
- Cleanses the hair and scalp without stripping it of moisture
- Gentle on the hair
- Can be used to cleanse and detangle at the same time
- Neutralizes the net of the hair surface negative charge
- Does not remove free lipids and adds lubrication to the hair shaft

Contras of the co-washing method

- It is not strong enough to remove heavy buildup and clarify the scalp
- May cause buildup if combined to nonsoluble silicone, petrolatum, or mineral oil-containing products
- There is the need to use a clarifying shampoo at least twice a month to remove excess sebum and residues

rinsing [4, 16]. Some co-washing products have a low pH level [12, 16].

Limitations of the Co-Washing Method

Co-washing is not compatible with silicones, mineral oil, or petrolatum products because of the residues that deposit under the cuticles [4–7]. Silicones are the most prevalent conditioners in modern hair care products. Silicones are classified as water-soluble and nonsoluble. The nonsoluble silicones, such as dimethicone, deposit along the hair fiber and under the cuticle scales, improving manageability and reducing the forces required for detangling. A frequent use of nonsoluble silicones requires a frequent use of sulfate surfactants to avoid an excess of residues. The most common surfactants of the regular shampoos are from the anionic group, the sulfate group.

References

- 1 Trüeb RM. [Shampoos: composition and clinical applications]. *Hautarzt*. 1998 Dec; 49(12):895–901. German.
- 2 Trüeb RM. Shampoos: ingredients, efficacy and adverse effects. *J Dtsch Dermatol Ges*. 2007 May;5(5):356–65.
- 3 Gavazzoni Dias MF. Hair cosmetics: an overview. *Int J Trichology*. 2015 Jan-Mar;7(1):2–15.
- 4 <https://www.naturallycurly.com/curlreading/co-washing/cowashing-is-using-regular-conditioner-good-enough>
- 5 Feltman R. The science (or lack thereof) behind the ‘no-poo’ hair trend. *Washington Post*. March 10, 2016. <https://www.washingtonpost.com/news/speaking-of-science/wp/2016/03/10/the-science-or-lack-thereof-behind-the-no-poo-hair-trend/>. Accessed July 1, 2018.
- 6 Cline A, Uwakwe LN, McMichael AJ. No sulfates, no parabens, and the “no-poo” method: a new patient perspective on common shampoo ingredients. *Cutis*. 2018 Jan;101(1):22–6.
- 7 <https://www.nopoomethod.com/>. Accessed July 1, 2018.
- 8 McMichael AJ, Hordinsky M. *Hair Diseases: Medical, Surgical, and Cosmetic Treatments*. New York (NY): Taylor & Francis; 2008. pp. 59–72.
- 9 Hall RR, Francis S, Whitt-Glover M, Loftin-Bell K, Swett K, McMichael AJ. Hair care practices as a barrier to physical activity in African American women. *JAMA Dermatol*. 2013 Mar;149(3):310–4.
- 10 Abraham LS, Moreira AM, Moura LH, Dias MF. Hair care: A medical overview: Part 1. *Surg Cosmet Dermatol*. 2009;1:130–6.

Those surfactants can easily remove the nonsoluble silicones used in regular conditioners. However, nonsoluble silicones cannot be removed by surfactants belonging to group 3, which are the nonionic surfactants used in co-washing products and may cause buildup if used frequently in combination with co-washing [16, 22]. Moreover, co-washing cannot provide a good level of cleanliness for the hair and scalp [4–6, 16, 22]. In individuals with oily scalp and seborrheic dermatitis the hair could get weighed down with the co-washing method alone, but they could benefit from an alternate use between co-washing and shampooing [4, 5, 16]. The co-washing method is suitable for individuals with a minimal product buildup on the hair and scalp and are not adequate scalp cleansers for individuals who regularly use hairstyling silicone-based products [4, 5, 9, 22]. There are no scientific data on how frequent the co-washing method should be used and how safe it is for the scalp health.

Conclusion

Co-washing is theoretically a possible solution to avoid an excess of frizz and roughness due to the use of regular shampoos containing sulfate surfactants. It is above all recommended for sensitive and ethnic hair; however, due to the low level of cleanliness, it has to be combined with a clarifying shampoo every 15 days. Nonsoluble silicones must be avoided in combination with co-washing due to the possibility of buildup. In summary, the pros and contras of the co-washing method are listed in Table 2.

Disclosure Statement

The author has no conflicts of interest to disclose.

- 11 Abraham LS, Moreira AM, Moura LH, Dias MF. Hair care: A medical overview: Part 2. *Surg Cosmet Dermatol*. 2009;1:178–85.
- 12 Gavazzoni Dias MF, de Almeida AM, Cecato PM, Adriano AR, Pichler J. The shampoo pH can affect the hair: myth or reality? *Int J Trichology*. 2014 Jul;6(3):95–9.
- 13 Robbins CR. *Chemical and Physical Behavior of Human Hair*. 5th ed. New York: Springer; 2012. pp. 348–443.
- 14 Draelos ZD. *Hair Care-an Illustrated Dermatologic Hand Book*. 1st ed. United Kingdom: Taylor and Francis; 2005.
- 15 Draelos ZD. Essentials of Hair Care often Neglected: hair Cleansing. *Int J Trichology*. 2010 Jan;2(1):24–9.
- 16 Sakamoto K, et al. *Cosmetic Science and technology: theoretical principals and applications*. Amsterdam, Netherlands: Elsevier; 2017. pp. 231–780.
- 17 Cornwell PA. A review of shampoo surfactant technology: consumer benefits, raw materials and recent developments. *Int J Cosmet Sci*. 2018 Feb;40(1):16–30.
- 18 D'Souza P, Rathi SK. Shampoo and conditioners: what a dermatologist should know? *Indian J Dermatol*. 2015 May-Jun;60(3):248–54.
- 19 Trüeb RM. [Shampoo]. *Ther Umsch*. 2002 May;59(5):256–61. German.
- 20 Kaplan IJ, Schwan A, Zahn H. Effect of cosmetic treatments on the ultrastructure of hair. *Cosmet Toiletries*. 1982;97:22–6.
- 21 Marshall RC, Ley KF. Examination of proteins from wool cuticle by two dimensional gel electrophoresis. *Text Res J*. 1986;56(12):772–4.
- 22 Is the 'no shampoo' trend healthy or harmful? Mercola website. Published January 16, 2016. Accessed July 1, 2018.