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Randomized Clinical Trial to Evaluate the Effect of Probiotic Intake on Androgenic Alopecia

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**Resumen del artículo**

**Abstract:** This study aimed to assess the impact of a combination of probiotic strains of *Lactiplantibacillus* on the treatment of androgenic alopecia (AGA). To this end, 136 individuals with AGA (62 men and 74 women) aged 18–65 years were enrolled in a double-blind, parallel-group clinical trial. A total of 115 individuals (57 in the probiotic group and 58 in the placebo group) completed this study within a 16-week intervention period. Capillary density, thickness, and length of hair were analyzed before and after the intervention using FotoFinder Trichoscale Pro. In addition, the gut microbiota was assessed by paired-end sequencing on the Illumina MiSeq platform (2 × 300 bp). At the conclusion Citation: García-Navarro, A.; Vasallo-Morillas, M.I.; NavarroBelmonte, R.; Vilanova, C.; Torrent, D.; Kilasoniya, A.; Moles-Ugeda, I.; Gallego-Herrera, E.; Ramírez-Boscá, A. Randomized Clinical Trial to Evaluate the Effect of Probiotic Intake on Androgenic Alopecia. *Nutrients* 2024, 16, 2900. <https://doi.org/10.3390/nu16172900> Academic Editor: Gang Wang Received: 26 June 2024 Revised: 1 August 2024 Accepted: 20 August 2024 Published: 30 August 2024 Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>). of the treatment period, a notable decline ( $p < 0.05$ ) in the number of telogen hairs was evident in the probiotic group while hair thickness decreased in the placebo group ( $p < 0.05$ ). However, the remaining variables did not exhibit any statistically significant changes. In the probiotic-treated group, individuals aged less than 37.5 years exhibited a reduction in the number and density of telogen hair ( $p = 0.0693$  and  $p = 0.0669$ , respectively) and an increase in hair length ( $p = 0.0871$ ). Furthermore, a notable decline in the number and density of vellus hair ( $p < 0.05$ ) was observed, and this was accompanied by no change in the hair thickness. The probiotic-treated group exhibited a significantly higher abundance of *Lactobacillus* ( $p$ -adjusted  $< 0.05$ , DEseq2 test) and demonstrated a notable reduction in the number and density of telogen hair, and this was accompanied by an increase in the

percentage of anagen hair. The probiotic mixture was well tolerated by the participants, with a treatment adherence rate of 90%. In light of this study's limitations, it can be concluded that a mixture of three strains of *Lactiplantibacillus* promotes the presence of terminal follicles, preventing their gradual miniaturization, which is a characteristic of AGA.