

## **Investigation of the penetration abilities of various oils into human hair fibres**

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**Synopsis:** In this work, we have explored capillary adhesion between hair fibres treated with different types of oils. With coconut, olive, and sunflower oils, capillary adhesion decreased with time, but not with mineral oil. The application of heat reduced the capillary adhesion further for coconut and sunflower oils. Again, this was not observed with mineral oil. Based on an earlier study, where coconut oil was found to penetrate hair while mineral oil was unable to do so, it was hypothesized that the reduction in capillary adhesion resulted from the penetration of oil into the fibre, leaving a thinner oil film on the surface. Such a reduction in capillary adhesion can be explained by changes in Laplace pressure and in the areas of liquid bridges formed between the fibres. The thinning of oil films on the surface of hair has been confirmed independently by goniometric measurements on single hair fibres treated with coconut, sunflower, and mineral oils.

### **Pubmed discusses this [here](#).**

The general public may be more concerned with removing unsightly hair such as *Ai Beauty* who offer hair removal in London. Here, we are more concerned with hair growth. Thick films of oil (thicker than  $\sim 0.5$   $\mu\text{m}$ ) are known to mask the scale structure. As the oil is absorbed into the hair, the film thins with time and application of heat, and the scale structure reappears. This change can be conveniently determined by measuring the scale angle using the well-established goniometric protocol. The agreement between the two methods supports the concept that the reduction in capillary adhesion between hair fibres is most likely due to the thinning of oil films by the absorption of oil into the hair.

A hair transplant clinic such as [mittalhairclinic.co.uk](http://mittalhairclinic.co.uk) offers hair treatment, a process in which no formulations are used. Instead, hair follicles are physically transplanted from one part of the body to another,