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r/Hairloss • 1 yr. ago
thatdocman

A Complete Guide to Hair Loss for Beginners (2024)

MPB (Male Pattern Baldness)

Hey guys, as the end of 2023 nears, I thought I'd do a post for those coming to this sub in desperate need of help.

I posted this to r/tressless recently and quite a few people reached out asking for me to post it in this sub as well, so here you go. Hope it helps :)

In this post I'm going to be talking about the science of hair loss and what to do if you are balding and want to stop it.

I'm a medical student and have donated a lot of my personal time to pharmacology, hormones and hair protocols through research and experimentation. There's a lot going on here on Reddit, and as a beginner it can be very daunting to decide on what to do. Obviously everything should be discussed with your doctor, but below is my best attempt at a guide to explain a little bit about hair loss:

-

I first noticed I was balding around 12 months ago, and rather than get caught up in the genetics of hair loss and trying to figure out whether it was Dad, my Mum's Dad, my Mum's Dad's Dad or the goldfish he owned when he was 10, I thought to myself:

> I can't change my **genetics**. Whatever my DNA sequencing (genomic regions) has in store for me in regards to balding, that's pretty much set. The best I can do is fight as long as I can using the highest quality science, products and methodologies to offset it.

And that's what I've been doing, with good success, over the past 12 months.

Let's get into it, and I'm going to do this in order of most important to least (in my opinion).

Getting to the root cause: DHT

Okay, so if we look at the entire testosterone/HPT axis pathway, cholesterol is converted to testosterone and some people think that's the end of the line, but it's actually not; 5-alpha reductase (5A1/2 in the image **below**) is the enzyme responsible for converting Testosterone (T) to its much more potent form DHT (dihydrotestosterone).

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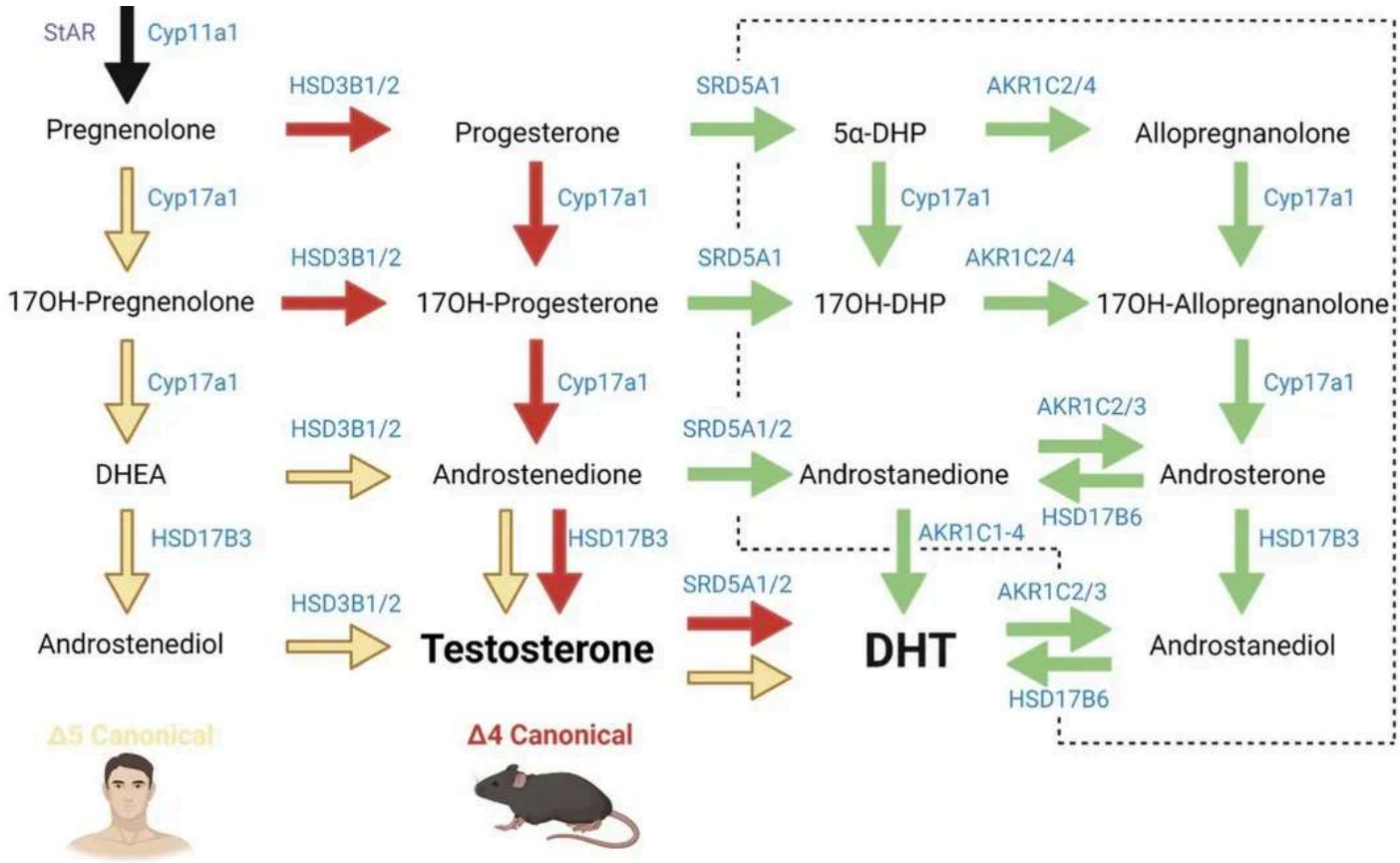

5-alpha reductase converts Testosterone to DHT, the hair killer.

Now, interestingly, 5-alpha reductase for whatever reason is very high prevalent in skin tissue - including the human scalp. ***And side note***: this is why guys who take testosterone gel or cream often have very high levels of DHT compared to guys who take injections, because the cream is being converted through the skin into DHT at a much higher rate than injectable esters into muscle bellies. But, basically, it is this 5-alpha reductase activity in the scalp that is converting testosterone to DHT, and DHT through a variety of mechanisms leads to follicular miniaturisation (hair thinning, and eventual loss of your hair follicles).

But **why**? Well, there are hundreds of factors: hormonal (androgen receptor density & sensitivity to said androgens), physical, genetic, environmental. The list goes on.

Note; this study goes into a lot more depth for those of you interested.

But, how do we actually combat balding?

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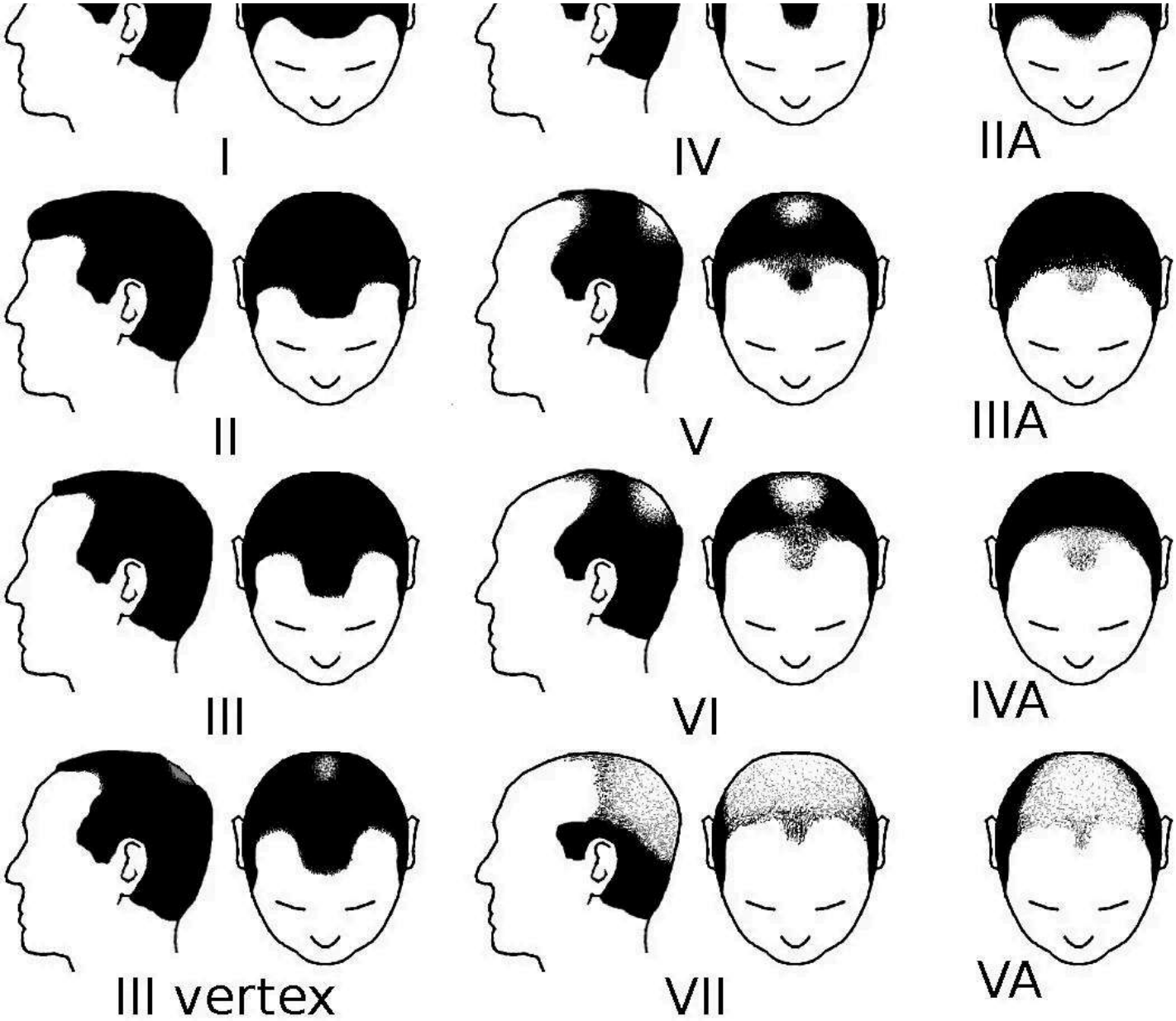

Most men tend to lose their hair in patterns as described by the famous Norwood Scale.

Slowing Down Male Pattern Baldness

5-alpha Reductase Inhibitors (Finasteride, Dutasteride):

With how much I've spoken about 5-alpha reductase and DHT, it seems logical that stopping this conversion of Testosterone to DHT is the absolute first line of defence against hair loss.

To really, truly combat hair loss, the first mechanism is as follows: **you absolutely need to reduce your hair follicles' exposure to DHT.**

And how do we do this? Well, finasteride is a drug that acts as a **5-alpha reductase inhibitor**. Sold under the name **Propecia**, the molecule is a strong 5-alpha reductase inhibitor, and has been shown to inhibit around 70% of serum (blood) levels of DHT from peak. The usual starting dose is 1mg daily. Dutasteride (sold under the name **Avodart**) is an even more potent inhibitor (usual starting daily dose is 0.5mg), and can block up to 98% of

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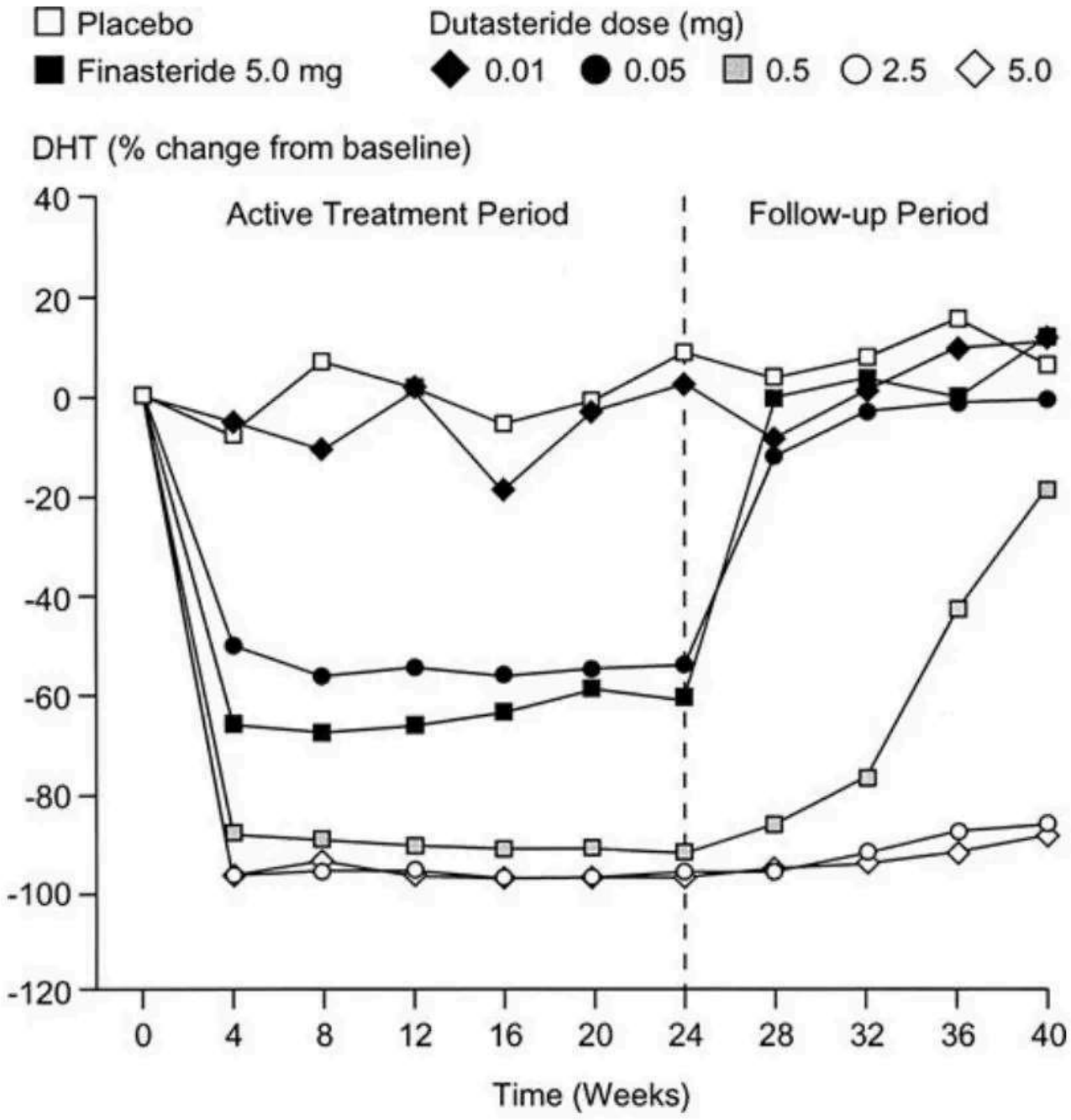
levels from Dutasteride was significantly more than Finasteride. Not only this, but the half life of Dutasteride is significantly longer than Finasteride (~8 hours vs. 5 weeks!), and you can see that in the Dutasteride group after stopping treatment (Follow-up Period), DHT levels remained suppressed for a much longer time.



DHT vs. Finasteride - what a study.

Side effects from 5-alpha reductase inhibitors are rare, although we should speak about them. Online, through various forums, Reddit posts, YouTube videos and TikTok's time and time again I see posts about nasty Finasteride side effects, post-Finasteride syndrome and how Rob can't get his Johnson hard anymore because of Finasteride, so his girlfriend left him.

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with the stories online, because the guy for whom Finasteride is working well and who is not experiencing any side effects, he isn't really going to post. Because why would he? He's doing fine.

However, I absolutely sympathise with the people who just cannot tolerate 5-alpha reductase inhibitors. Side effects can be very real, and this is why it is vitally important to always consult with a qualified doctor before deciding on any medication: I'm just presenting the science. Everyone reacts slightly differently, and these can be strong medications - so it's important to be well-informed and sensible with whatever path you and your medical practitioner decide to go down.

Topical Minoxidil 5% (Rogaine):

Minoxidil is a compound that has been shown to increase the rate of DNA synthesis in anagen (growth phase) bulbs of hair follicles. Basically minoxidil stimulates hair cells to move from telogen (resting phase) to anagen (growing phase) - so instead of having hair follicles resting, it is telling the body to move them back into a growth phase by shortening the resting phase. The idea here is that you get more 'regrowth' of hair follicles.

Minoxidil stimulates hair cells to shorten the resting (telogen) phase and go back into an anagen (growing phase). Often, progress pictures will show significant new regrowth or 'baby' hairs growing with minoxidil treatment.

I apply *Rogaine*, a 5% strength Minoxidil foam twice daily in areas that I feel are receding. The nice thing about the foam is that it isn't super sticky (unlike some people report with the gel), and it also acts as a nice way to hold my hair throughout the day, like hair product.

As you can see from the photo below, there is a vast difference between telogen (resting phase) and anagen (growing phase), and the idea is that the more hairs you can keep in anagen, the more healthy your hair will be, by

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Come on little baby hairs! Grow!

There is also the option of oral minoxidil, which anecdotally at least seems to be very powerful at regenerating 'baby' hairs (or, new regrowth). Again, oral minoxidil can have some pretty significant side effects and drug interactions with blood pressure medications, so speaking through with your doctor is key!

Ketoconazole Shampoo:

This shampoo is primarily an anti-dandruff shampoo, but research has shown it may increase the proportion of hairs in anagen phase (growth phase) - resulting in reduced hair shedding. This study showed that 1% ketoconazole shampoo increased hair diameter over baseline after 6 months of use and reduced shedding. Interestingly, participants' hair diameter also increased over baseline, showing that it may play a role in creating thicker hair.

Nizoral is a common brand here in Australia of 2% strength ketoconazole shampoo.

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What is good about ketoconazole, is that it's also a weak androgen receptor antagonist. What does this mean? It means it competes with DHT and Testosterone for binding to the active binding domain on the human AR (androgen receptor). If a compound can bind to a receptor without influencing its usual effects, it is said to be an **antagonist**. Basically, if ketoconazole can get into an androgen receptor before Testosterone or DHT, it will occupy that site and block T/DHT from binding and starting their usual process of killing off hair follicles (follicular miniaturisation).

Goodbye DHT, nobody wants you here.

Dermarolling

Derma-what?

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In this study, the dermarolling + minoxidil treated group was statistically superior to the minoxidil only treated group in promoting hair growth in men with balding patterns, for all primary efficacy measures of hair growth. In fact, the microneedling group outperformed even the minoxidil group in terms of how much hair was regrown after 12 weeks:

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The mechanism seems to be that continued microtrauma to the scalp skin leads to a release of platelet derived growth factors and other growth factors that are sent to the area of scalp, to aid in the skin wound regeneration. The added benefit is that there seems to be some carry over effect to hair growth, as dermarolling seems to activate stem cells or 'unspecialised' cells that are yet to be differentiated, and differentiate them into hair follicle cells, meaning more hair growth. Basically, its a wound healing response that brings growth factors to the area of the scalp to increase hair growth.

I have played around with a few different protocols, but I use a 1.5mm roller and roll horizontally, vertically and diagonally for about 30 seconds in areas where my hairline is thinning or receding. I do this every 10 days. You don't want to press so hard that you draw blood, but it should also hurt slightly. I mean, putting hundreds of tiny spikes into your scalp isn't really my idea of Sunday night fun. But hey, if it regrows some hair why not?

There are also derma-stamps and motorised tools, all of which assist with the end goal: creating a wound healing response to bring growth factors to the scalp, and potentially assist the penetration of Minoxidil deeper into the scalp skin tissue.

Natural DHT blocking compounds:

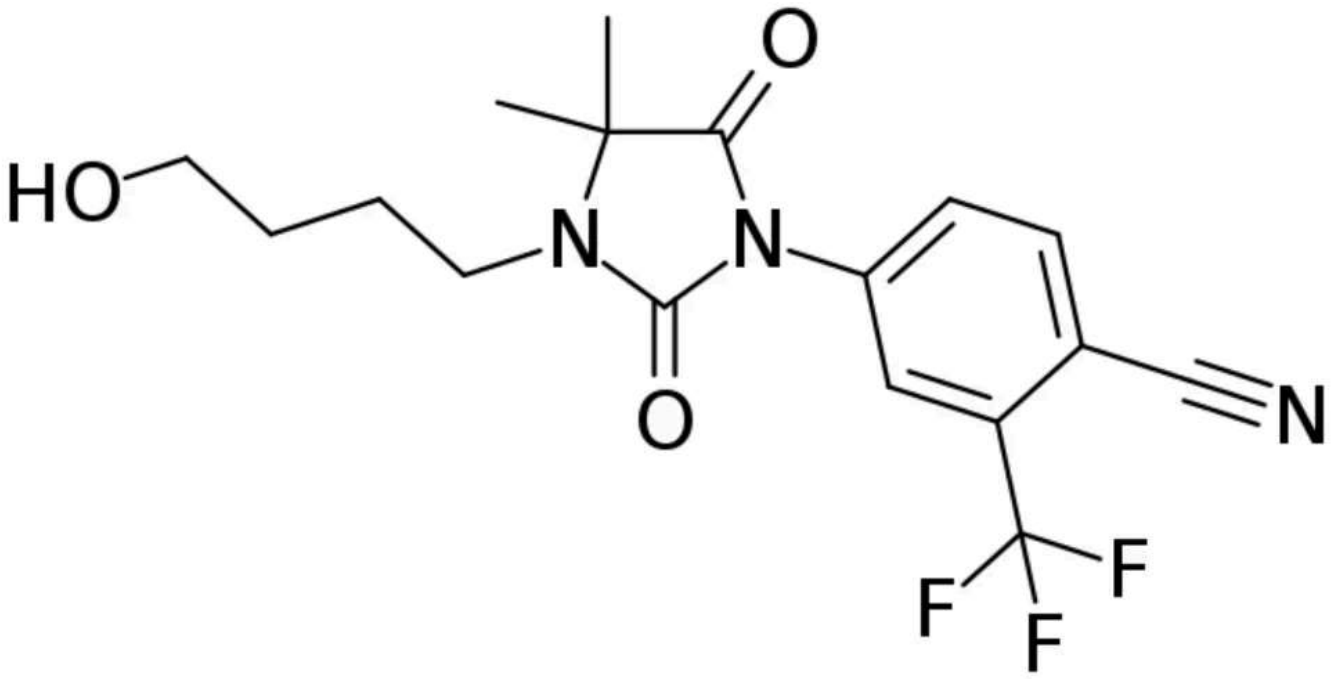
Natural DHT blockers are also options, although obviously the results aren't going to be nearly as strong as what is mentioned above.

Some people have good results (anecdotally) with rosemary oil applied topically, green tea and saw palmetto are options here. However, the science is very hit and miss, and in any event, I can't see natural compounds competing against the 'Big 4'.

RU58841:

the compound below, and whether you choose to take a completely untested chemical is up to you. But I don't recommend it - have I said that enough?

Alright so, apart from sounding like a bunch of random letters because your cat ran over your keyboard, RU58841 is a strong DHT blocker (it has been shown to inhibit around 70% of DHT binding to the androgen receptor), but not in the way that Finasteride or Dutasteride work.



The chemical structure of RU58841.

Instead of finasteride and dutasteride which work on inhibiting the 5-alpha reductase enzyme, RU58841 works on the AR itself - occupying the active site, so that when DHT tries to get in and exert its hair destructive effects in the scalp, it can't, it's literally ***blocked*** from accessing the active site of the androgen receptor.

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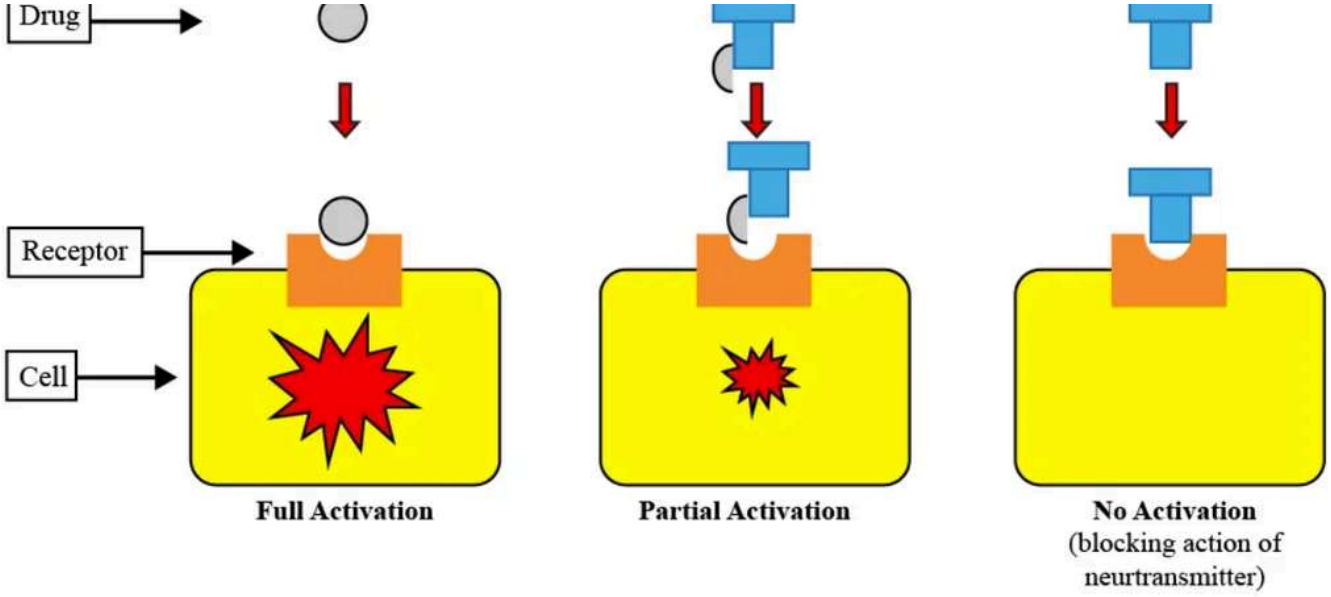

RU58841 operates like an androgen receptor antagonist (3rd receptor, on the right). It binds to the receptor and stops testosterone and DHT from binding, meaning that DHT cannot then exert its hair miniaturisation effects.

And in this study, RU58841 was found to inhibit 70% of DHT binding. Combining something like finasteride or dutasteride which attacks 5-alpha reductase converting T to DHT with RU58841 which stops ~70% of DHT binding to the androgen receptor, and you'd now be attacking hair loss from 2 *vectors*: **T to DHT conversion, as well as at a receptor level**. Now you can start to understand why this is a nuclear option for hair loss, and incredibly powerful.

However, despite how good all of that sounds in practice, just remember, RU58841 is completely untested in regards to side effects. There is no long-term safety data on how it may or can impact human health, so what I'm saying (for legal reasons) is don't use it. Get what I'm saying?

Final Thoughts:

And, there it is guys. Now, just a quick note, this isn't a super comprehensive list of all supplements for a hair regrowth/hair protection protocol, but is a solid start.

There are certainly more 'niche' options, or compounds in development now that may be promising (or not, looking at you Phase 3 of Pyrilutamide trials), but this guide was just the bare basics for a beginner to wrap his head around (no pun intended) the science and how to start combatting AGA.

In particular, if you want to save your hair, it's going to be the '**big 4**': finasteride (or Dutasteride), Minoxidil, Ketoconazole shampoo and derma-rolling roughly once a week to every 2 weeks.

This would follow the best possible science that we have at the moment, in terms of targeting as many vectors as possible:

1. T to DHT blockade (5-alpha reductase inhibitors, Fin/Dut)
2. Anagen/telogen manipulation (Minoxidil)
3. Localised scalp tissue androgen receptor antagonism (Keto, RU58841)
4. Wound healing response cascade (physical microneedling/trauma)

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Kayaba_Attribution • 1y ago •

Wow this is amazing info, thank you!

11 Reply

1 more reply

That_Development9699 • 10mo ago •

where does one get a derma roller ?? Amazon ??

7 Reply

4 more replies

fishy_wolf • 10mo ago •

Can you combine all 4 treatments or should you be using only one at a time?

7 Reply

1 more reply

alifaraz21 • 7mo ago •

How often should we apply Keto? Is twice a week ok? I think it also has the added benefit of removign dandruff which might come with minoxidil. Excellent post btw. I feel that too many people ignore basic treatments and rush to transplants with disappointing results

6 Reply

Hefty-Tax348 • 5mo ago •

Ketokonazole shampoo 3 times per week , aply it for 20 minutes an then wash your hair

5 Reply

6 more replies

MiniskirtEnjoyer • 6mo ago •

menthol, arnica, rosmary, camphor

the gels have a fresh feeling on the skin and you really feel how the area gets better blood circulation

5 Reply

3 more replies

Appropriate_Sugar221 • 8mo ago •

This is great, thanks for putting this together.

I am really curious about whether derma rolling by itself would help with hair regrowth in some cases. I luckily have only a receding hairline which isn't too drastic, but I want to get on top of it asap. Have you heard of anyone just dermarolling in a case like this? Would be keen to see ketoconazole, a natural alternative like rosemary oil and dermarolling in combination. I feel like if the long term exposure to these chemicals could be avoided for still reasonable 'natural' results a lot of people would go down that route. I certainly would

4 Reply

3 more replies

tenryuu72 • 7mo ago •

so when I experienced absolute 0 regrowth in any shape or form after a year of min and also needling from time to time, could I assume on those spots where really nothing happened, that the follicles in those areas might've been just completely died off and are non existing and thus making the use of min (or anything) completely pointless?

4 Reply

1 more reply

Background_Client736 • 1y ago •

Hey, in your lit review have you found that DHT is also the cause for women's hair thinning/ hair loss? Or is it mainly just in men, is it a different chemical/hormonal change in women?

3 Reply

3 more replies

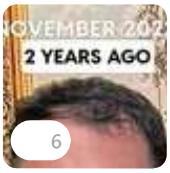
Reasonable-Soil125 • 9mo ago •

Micro-needling without min, is it worth it?

3 Reply

r/Hairloss

UPDATE ON MY HAIR JOURNEY



21 upvotes · 1 comment

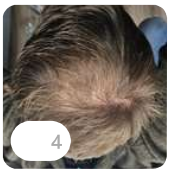
r/Hairloss

24M hairs thinning GF says my hairs off ...

15 upvotes · 8 comments

r/Hairloss

38M Crown thinning, whats my best option?



15 upvotes · 24 comments

r/Hairloss

Cut or leave long? If cut, what style?

14 upvotes · 17 comments

r/Hairloss

Day 10 to 45 to 108

10 upvotes · 1 comment

r/Hairloss

balding or parting? hair gets extremely oily

8 upvotes · 11 comments

r/Hairloss

I shake my head and observe my fallen hair. About 50% of my hair looks noticeably thinner than normal, am i doomed?? My hair density is decent tho

20 y/o moderate/severe anxiety about hair loss would appreciate any opinions/support

6 upvotes · 11 comments

r/Hairloss

Am I crazy or does it look like my hair is thinning/receding?

6 upvotes · 13 comments

r/Hairloss

Am I officially losing hair at 18?

5 upvotes · 4 comments

r/Hairloss

Is it over for me guys? What norwood am I

5 upvotes

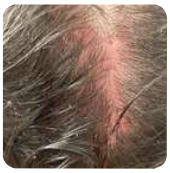
r/Hairloss

Opinions on this

5 upvotes · 3 comments

r/Hairloss

help!!!

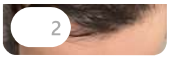


4 upvotes · 10 comments

r/Hairloss

considering using minoxidil waiting for a appointment with a derm next month whats the best route to go with minoxidil? foam? topical possibly pill?

4 upvotes · 1 comment



4 upvotes · 18 comments

r/Hairloss

Is this a normal amount of density loss or am I cooked

4 upvotes · 1 comment

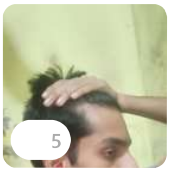
r/Hairloss

No idea if I'm balding or just have a deep hairline

4 upvotes · 1 comment

r/Hairloss

Am I cooked ?? 20



4 upvotes · 3 comments

r/Hairloss

Is this early balding or am I just becoming self aware 16m

4 upvotes · 17 comments

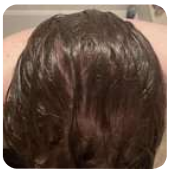
r/Hairloss

Should do something gang? (21M)

3 upvotes · 3 comments

r/Hairloss

22M Is this normal?



3 upvotes · 8 comments

3 upvotes · 4 comments

r/Hairloss

What do I do

3 upvotes · 1 comment

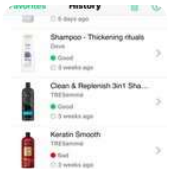
r/Hairloss

finasteride hasnt really been working

3 upvotes · 7 comments

r/Hairloss

App recommendation



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