

Arroze®

The Miracle of Rice



WELLTECH
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Miracle of Rice

HAIR GROWTH INGREDIENT

Arroze®

The Story of Rice



- The influence of rice on humankind reaches far back in time.
- Rice has been grown in Asia for the last 7,000 years.
- Rice is the seed of the grass species *Oryza sativa* (Asian rice) or *Oryza glaberrima* (African rice).

- Today, the majority of all rice produced comes from Asia.
- Asian farmers still account for 87% of the world's total rice production.
- As a cereal grain, it is the most widely consumed staple food for a large part of the world's human population, especially in Asia.



Rice: More than just food

Ancient Hair Care: Rice-Water Shampoo

The Yao minority ethnic women from Huangluo Village, in Guangxi Province, in southern China, have one striking feature in common—their extraordinarily long hair that stays black until they are around 80 years old.

The Yao women believe that the fermented rice water helps to keep their hair black up past the age of 80.



Fermented rice water has been the secret to beautiful hair for village women and imperial princesses in the East since ancient times.



A Japanese study from 2010 on the effects of using rice water for hair showed many benefits, such as decreasing surface friction and improving hair elasticity.

Yao women



Rice: More than just food

The Tai Dum or Black Tai (Thai : ไทดำ) are an ethnic group of Vietnam, Laos, China, and Thailand. They have charming beauty of Thai girls dressing with a lot of special cultural costumes.



THE CELEBRATING NEW YEAR 'S TAI DAM.

Tai Dam woman has traditionally tend to do before New Year's day. They wash hair with rice water at New Year's Eve. Ferment rice water for 2-3 days until precipitation and keep clear rice water for washing hair.

Remark : Fermented rice water is rice water that has gone slightly sour. Rice water is rich in antioxidants, minerals, vitamin E, and traces of pitera, a substance produced during the fermentation process.

TANG CAU CEREMONY

is the shampooing step for the new bride. Two bridesmaids will help the bride to shampoo her hair with NAM KHAU MA. It is rice water taking from soaked glutinous rice mixed with boiled grapefruit leave extract, ivory, and camphor.



The Miracle of Rice

เรื่องของการทำผ้ามัสลินสะอาด คุณยายเอาเกลือทำความสะอาด ไม่เคยใช้ยาสีฟัน เอาเกลือ เพราะว่ามันไม่เกิดเชื้อโรค มันจะไม่ปวดฟัน ไม่เคยเป็นอะไร ไม่ใช้แปรงสีฟัน วิธีทำความสะอาดก็คือ ใช้ถ่านไฟถ่าน เอาทั้งก้อน ถูทุกซี่ ถูเรียงมาเรื่อยๆ ซ้างนอก ซ้างใน ถูเสร็จก็บ้วน แล้วเอาเกลือมาอม ชัดตามหลัง คุณยายไม่รู้จัก แปรงสีฟัน หรือยาสีฟัน ตอนที่คุณหมอให้มา ก็ไม่ใช่ คุณยายทำอย่างนี้ใช้ได้ผลจนปัจจุบัน ทำอย่างนี้ไม่ปวดฟันเลย คุณยายทำความสะอาดฟันแบบ เข้า เย็น ไม่เคยไปหาหมอฟัน ทำอย่างนี้จนอายุ 80 ปี

She never used
any shampoo.
She only wash
her hair with rice
water.



80 Years
old

เวลาคุณยายสระผม ก็ใช้น้ำข้าวข้าว ไม่เคยใช้ยาสระผม คุณยายจะใช้น้ำข้าวเหนียว และเอามาสระผม สระแล้วก็ล้างออก

คุณยายไม่มีโรคประจำตัว

เรื่องอาหารการกิน บางครั้งคุณยายกิน 2 เวลาถ้าอยาก บางทีเวลาหัวก็กิน คุณยายจะชอบกินไก่บ้าน กุ้งไม่กิน ปลาตุกไม่กิน ปัจจุบันกินเนื้อหมูทอด แต่กินได้ทีละนิด จะกินน้ำพริก ลวกผัก ปลาในนา ปลาทุ ปลาจากตลาดไม่กิน ของหวานก็ไม่กิน ไม่ชอบ บางทีซื้อน้ำเต้าหู้ก็กิน ต่ำบะหุ้ง แม่ก็ปิ่นเต๋อ กินบิได้ เพราะเขาตำเผ็ดโหด ไม่ชอบกินของตลาด ชอบกินน้ำพริก ต้มผัก

Not Only Rice, But Rice Bran

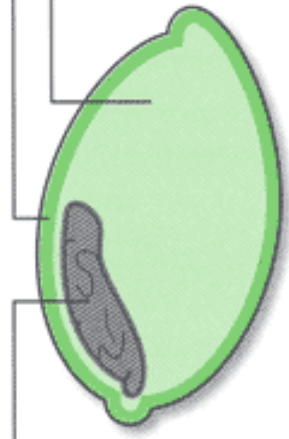
Whole grain kernel

Bran

"Outer shell" protects seed
Fiber, B vitamins, trace minerals

Endosperm

Provides energy
Carbohydrates, protein



Germ

Nourishment for the seed
Antioxidants, vitamin E, B vitamins



- Rice bran oil and water from washing rice have been used traditional recipes **for anti-hair loss and aging hair**
- They contain various antioxidants and bioactive compounds (including γ -oryzanol, ferulic acid, phytic acid and unsaturated fatty acids) that impart beneficial effects on human health.
- Bioactive compound from rice bran extract (unsaturated fatty acids) have been proved for inhibiting *5 α -reductase enzyme*.

Ruksiriwanich W. J. of Supercritical Fluids 59 (2011) 61– 71.

Raw Material Control



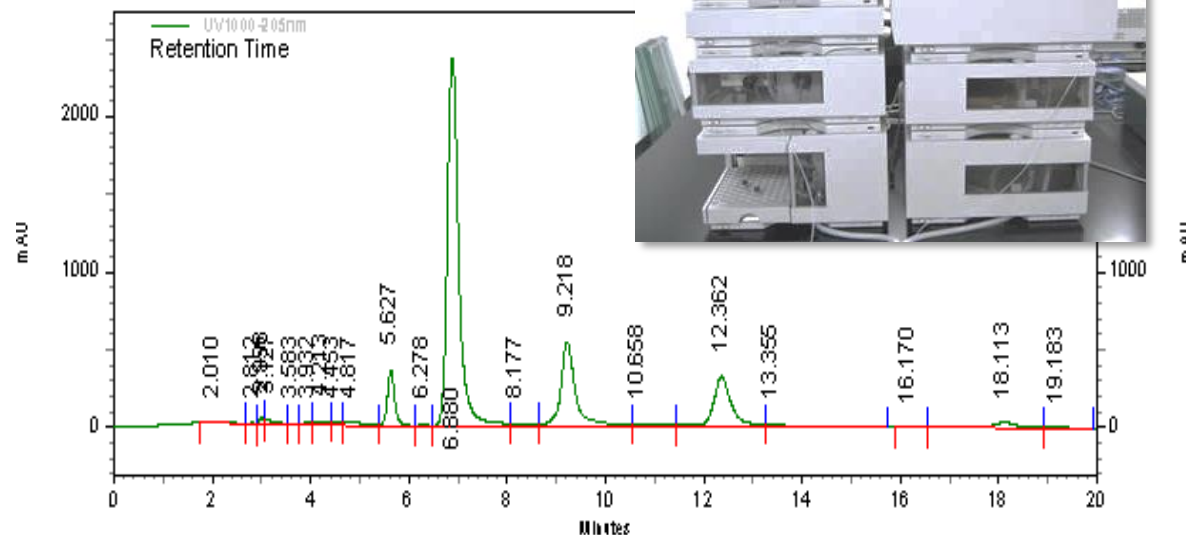
- Screening rice bran sources
- Controlling quality of extraction
- Standardizing active by HPLC



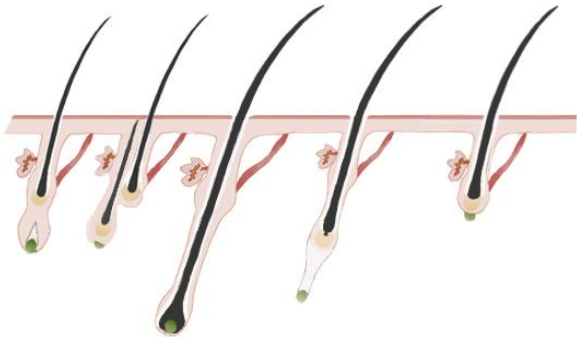
Semi-Purification
Process



Active Control by
HPLC



Androgenetic Alopecia



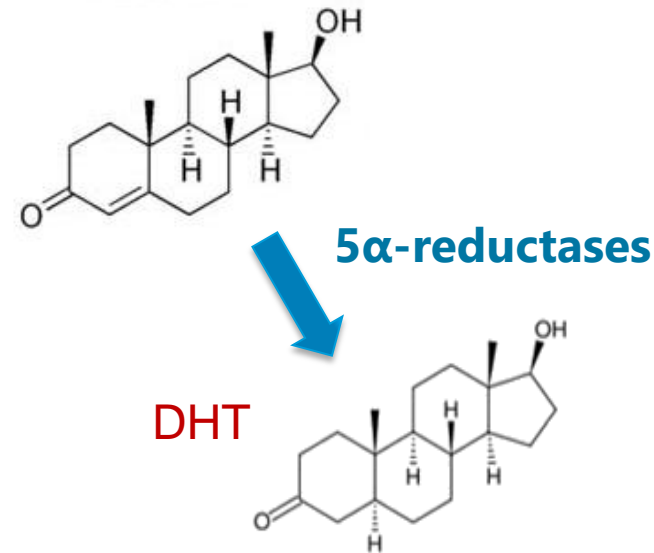
Normal hair growth cycle



Androgenetic alopecia
DHT shrinks the hair follicle

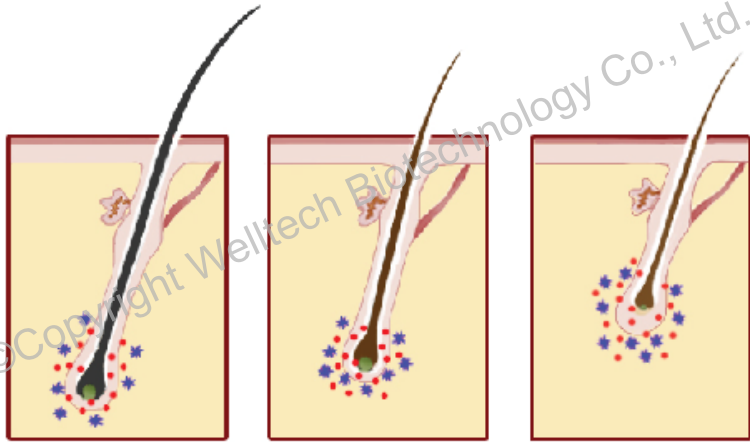
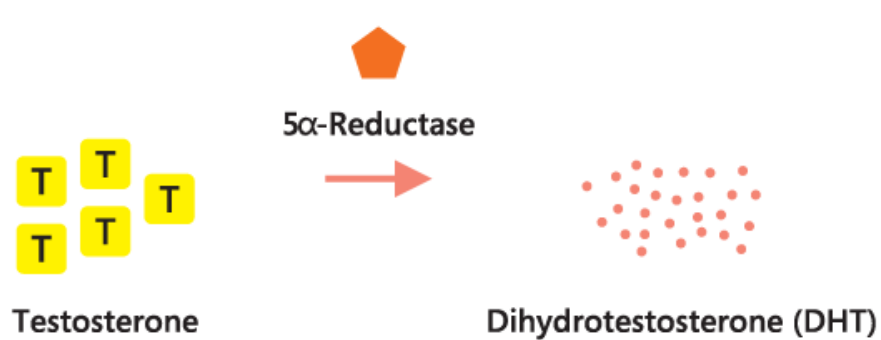


Testosterone



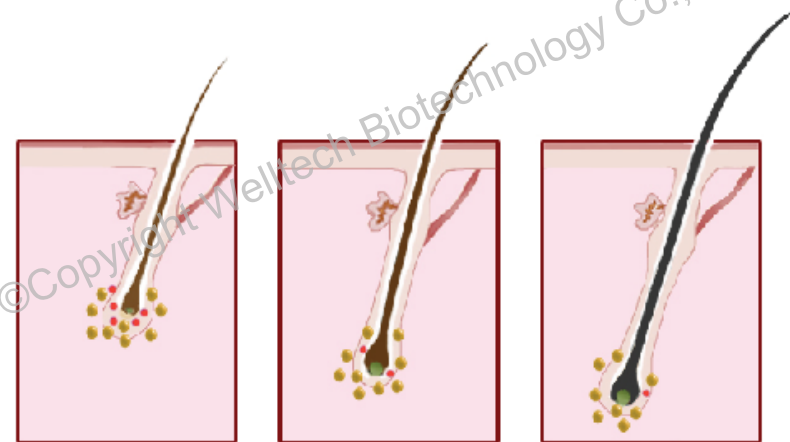
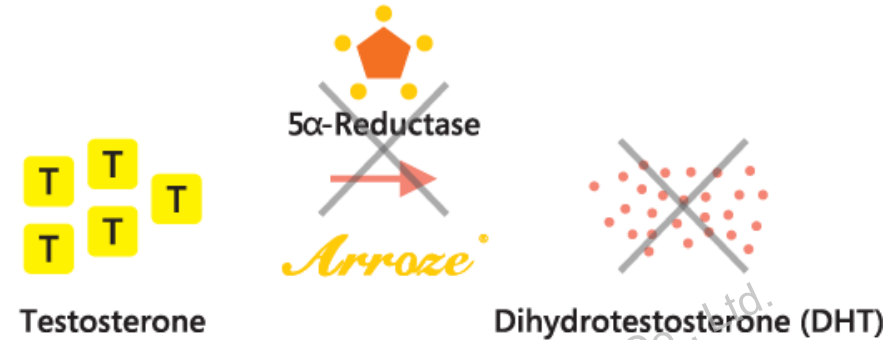
- **Dihydrotestosterone (DHT)** plays an important role in developing androgenetic alopecia by binds to large numbers of receptors of the scalp hair follicles. Then the follicles are shut down and die off completely and the subsequent inability to grow hair.
- **5α-reductase** is the key enzyme in converting testosterone to DHT.
- **5α-reductase blocking compounds** have potential against androgenetic alopecia such as finasteride and dutasteride.

Proposed Mechanism of Action



★ Free Radical

- DHT causes the miniaturization process.
- Oxidative stress from free radical leads to degenerate hair follicle.



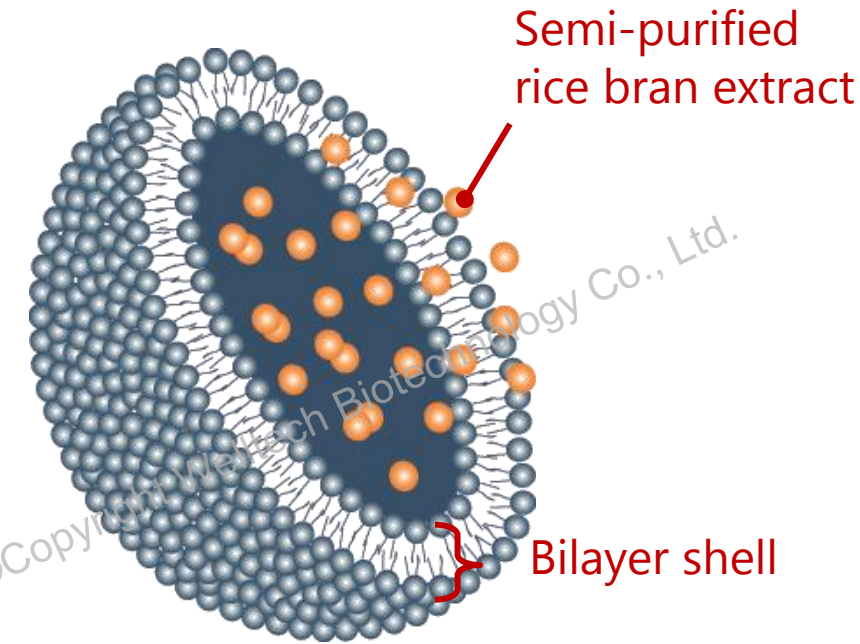
● Arroze®

- Arroze® blocks DHT formation.
- Arroze® protects hair follicle from oxidative stress.

Transfollicular Delivery

NIOSOME TECHNOLOGY

Arroze®



Niosome Technology

Arroze® is the encapsulated vesicle containing the **natural 5 α -reductase inhibitory** compound found in the rice bran (*Oryza sativa*).

Arroze® can direct to hair follicles via transfollicular absorption of niosome technology.

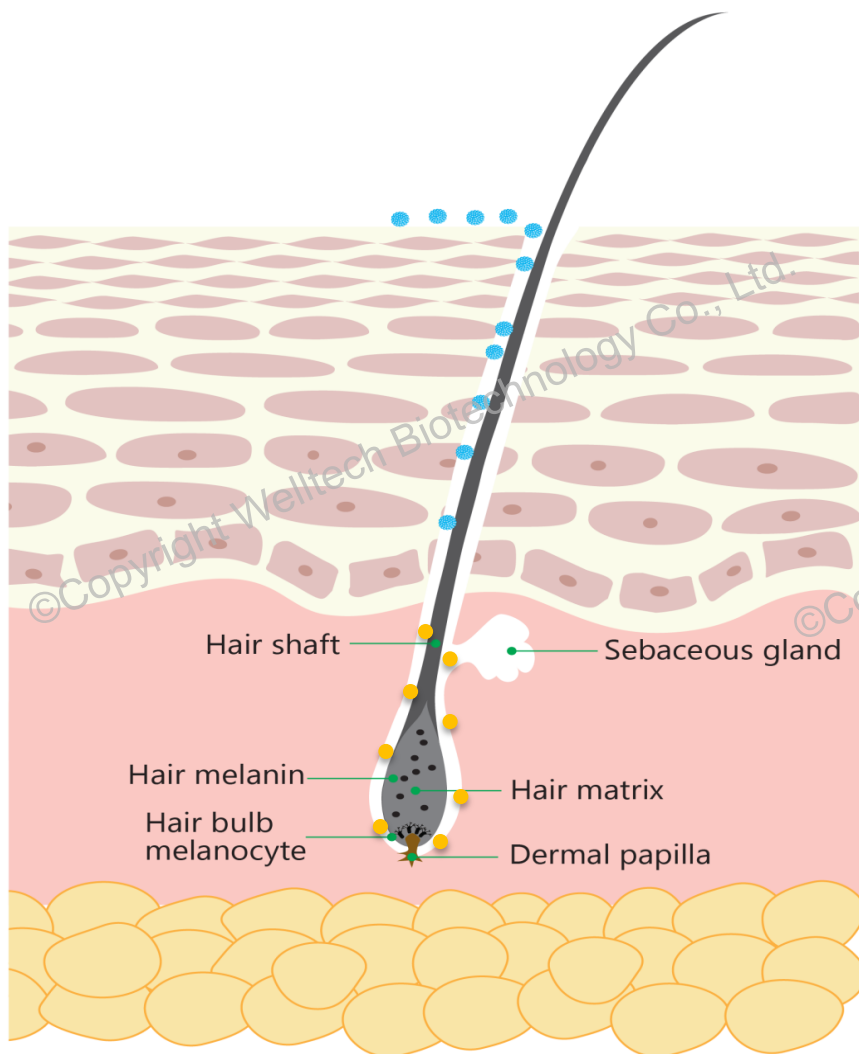
Niosome Technology

- Niosome technology is the vesicular encapsulation designed for encapsulate and delivery substance to the target sites like liposome.
- Niosome is bilayer spheroidal structure comprised of nonionic surfactants instead of phospholipid in liposome.
- Niosome has **higher chemical stability** and **smaller size** than liposome.

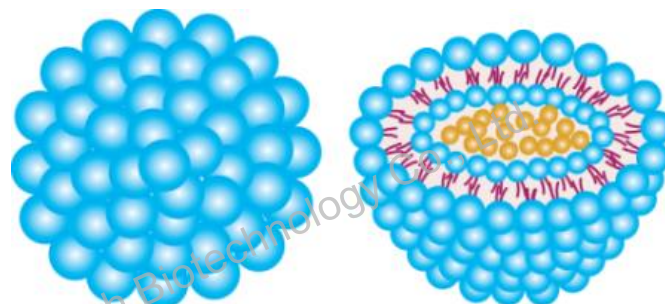
Advantage of Niosome

- Increase transfollicular penetration of actives
- Increase stability of actives
- Non-irritated, non-immunogenic
- Aqueous base system
- Cosmetic market acceptance

Transfollicular Delivery



Niosome Technology



- Arroze® is produced by state of the art technology of encapsulation.
- Arroze® has a size distribution in the range 0.2-0.6 μm which is the most appropriate to deliver via hair follicle.

5 α -Reductase Inhibition

IN VITRO STUDY

Arroze[®]

Study Procedure

➤ Cultivation of cells:

The pellet of human DU-145 cells were incubated with FBS-DMEM medium. Then cells were exposed to test substance for 24 h. The medium were removed, and the cells were washed with PBS, trypsinized for 2 min and suspended in PBS.

➤ Total RNA extraction:

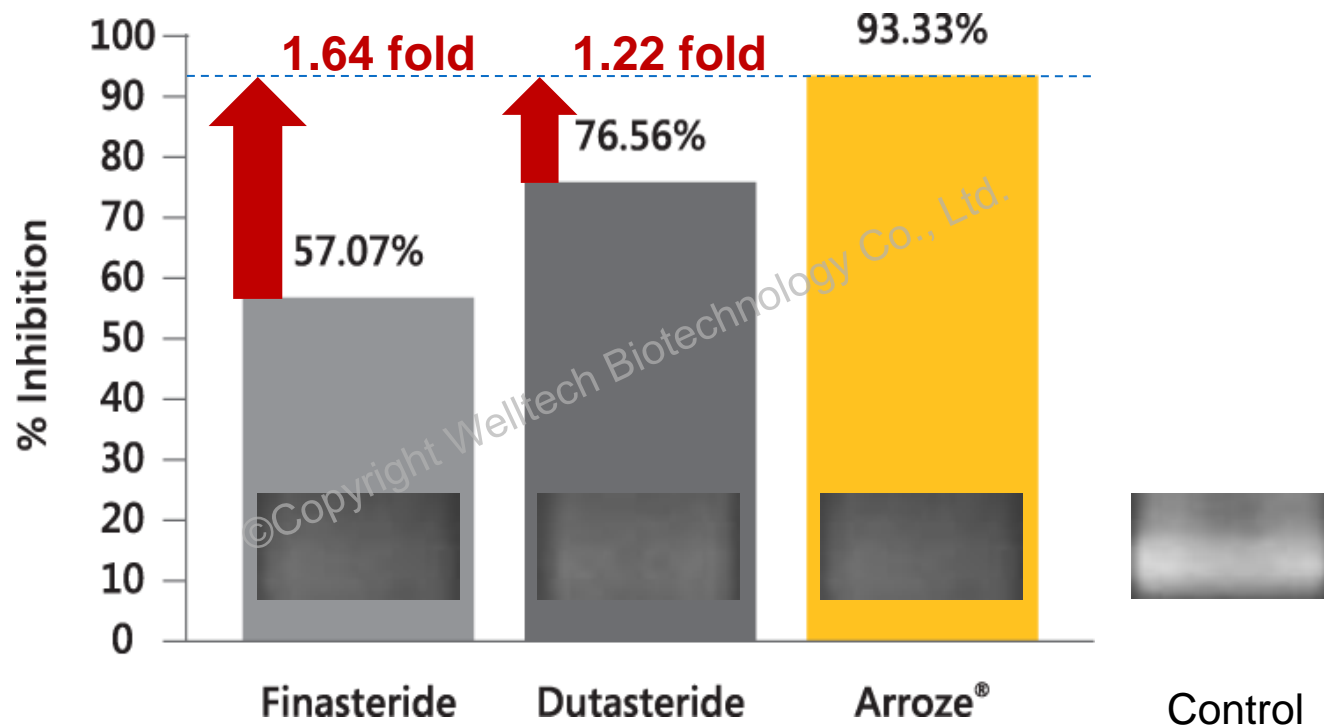
The total RNA from the cell pellets was extracted by the RNA extraction kit. The concentration of the total RNA was quantified by Qubit Flu- line orometer and Quant-iT™ RNA BR assay kit.

➤ Reverse transcription-polymerase chain reaction (RT-PCR):

The 5 α -reductase type 1 and 2 genes were amplified from the extracted RNA. The RT-PCR products were loaded on 1% agarose gel in the 1x tris-acetate-EDTA (TAE) buffer chamber at 100V for 30min. The human 5 α -reductase type 1 and 2 dsDNA samples were quantified by the Qubit fluorometer and Quant-iT dsDNA assay kit.

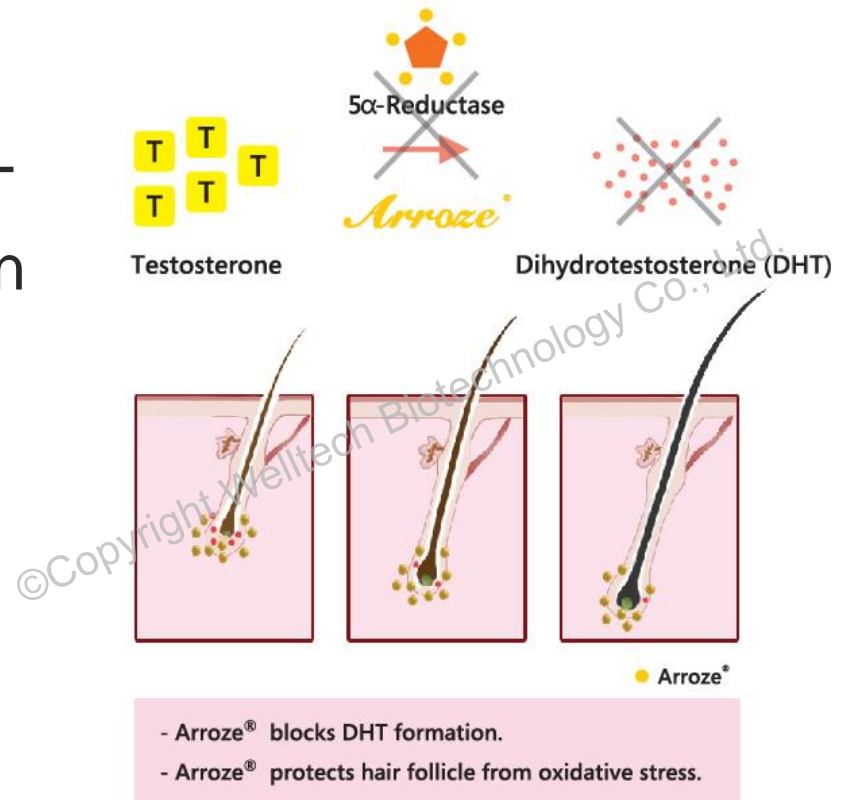
Result: 5 α -Reductase Inhibition

Arroze[®] gave a 5 α -reductase inhibition on DU-145 cell line 93.33% \pm 10.93 which was 1.64 and 1.22 times higher than the standard 5 α -reductase inhibitor, finasteride (57.07% \pm 6.52) and dutasteride (76.56 \pm 4.76) respectively.



Conclusion

- **Arroze®** could inhibit 5 α -reductase, the key enzyme in converting testosterone to DHT which plays an important role in developing androgenetic alopecia.
- **Arroze®** possesses a good potential to be an effective hair growth promoter.



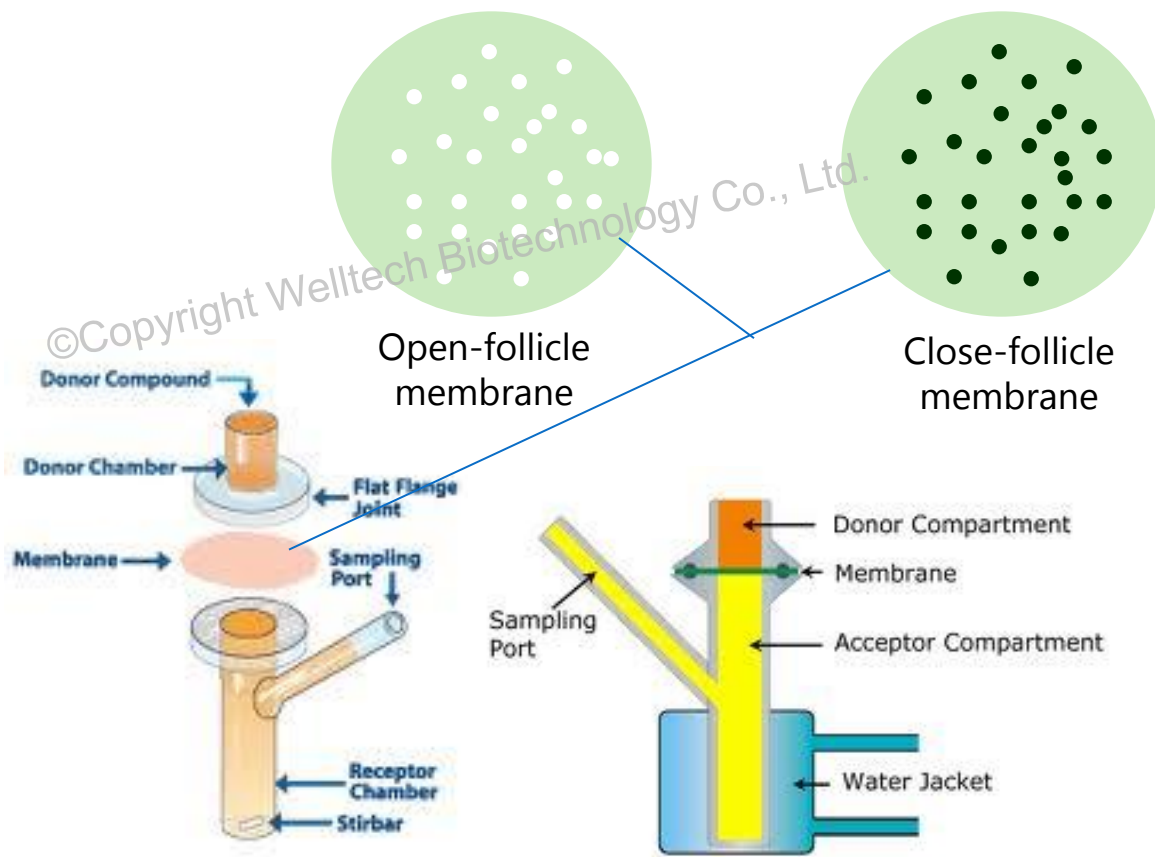
Transfollicular Delivery

IN VITRO STUDY

Arroze®

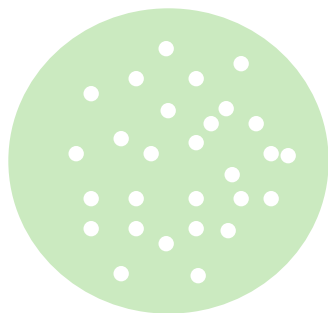
Procedure

Transfollicular delivery of Arroze® was analyzed by Franz diffusion cells with follicular closing technique. The number of hair follicle was counted. A pair of sample with an equal number of hair follicle was used as opened and close sample.

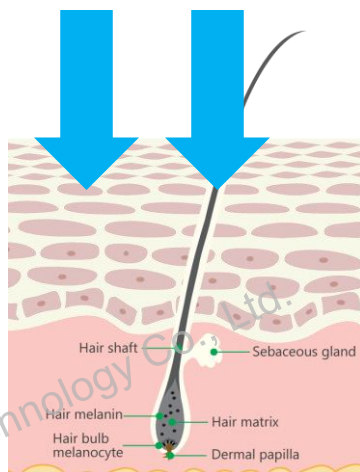


Follicular Closing Technique

A.



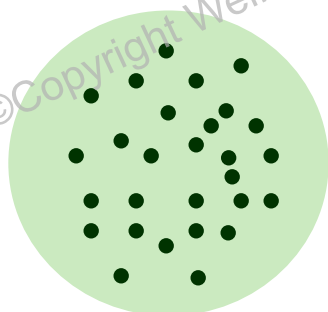
Open-follicle
membrane



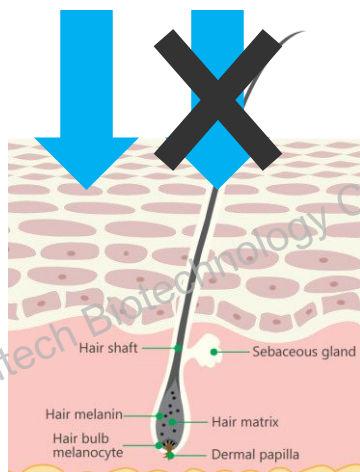
Skin Delivery

A = Transepidermal route +
Transfollicular route

B.



Close-follicle
membrane



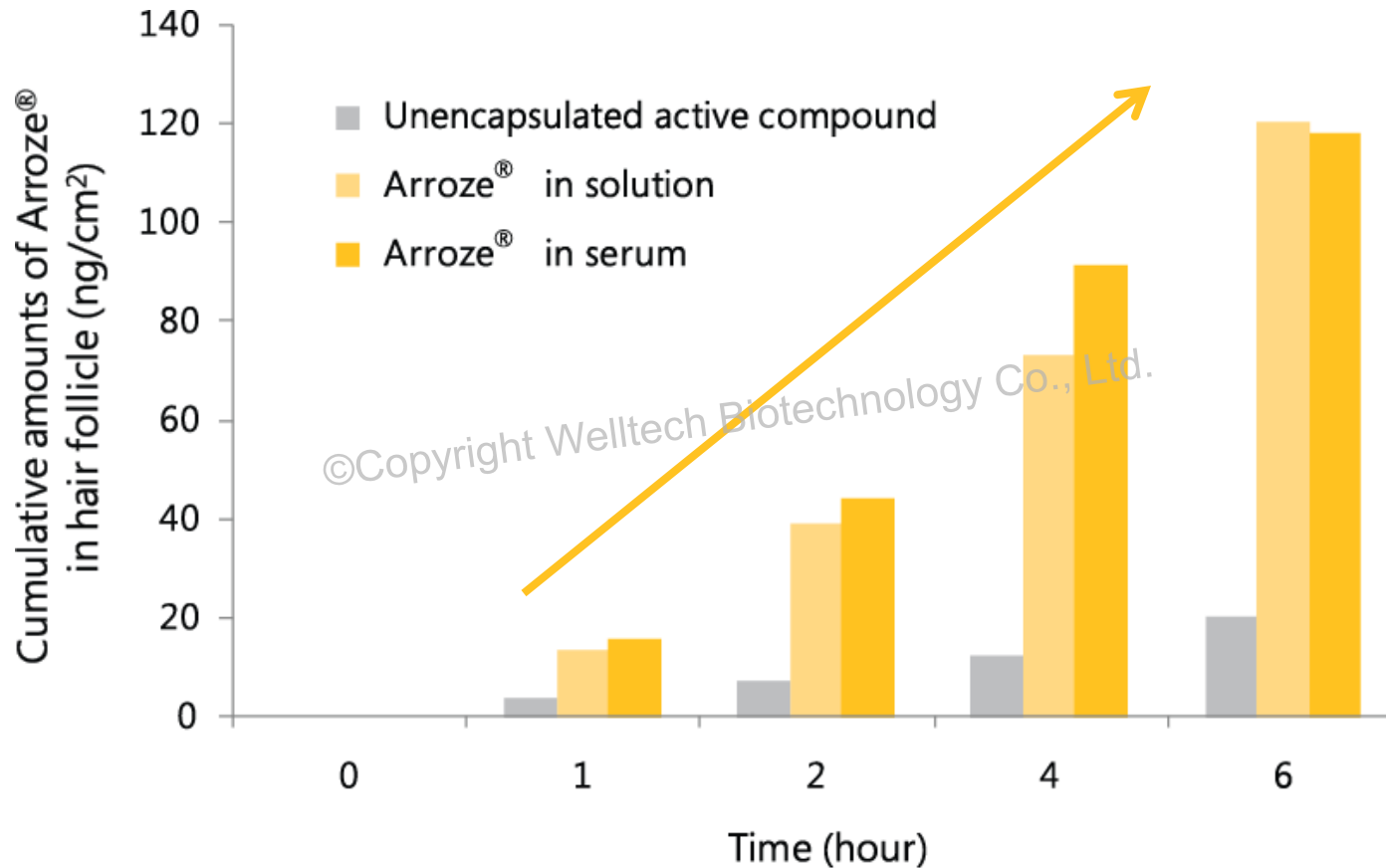
B = Transepidermal route only.

A-B = Transfollicular route

Plot Graph

Result: Transfollicular Delivery

Arroze[®] can direct absorb into hair follicles via transfollicular absorption of niosome technology.



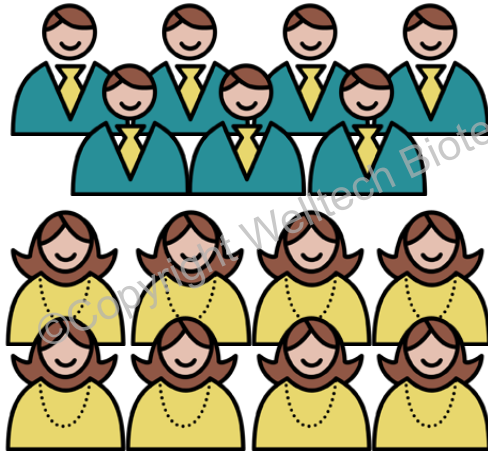
Conclusion

- **Arroze®** had demonstrated significant transfollicular delivery of active compound into hair follicle via follicular closing technique.
- **Arroze®** showed superior amount of active compound in hair follicle than unencapsulaed active compound.
- Encapsulation technology of **Arroze®** could confirm transfollicular delivery of active compound to the target site.

Hair Growth CLINICAL STUDY

Arroze®

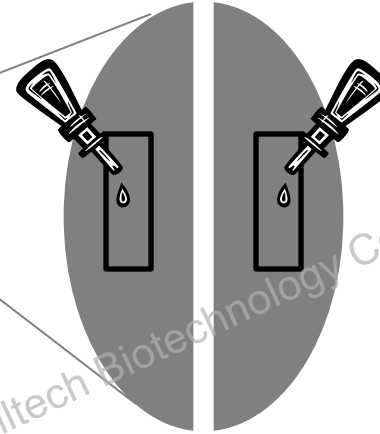
Clinical Study Protocol



15 volunteers

(5 male, 10 female: range
26-51 years old)

2% Minoxidil
lotion



Arroze[®] serum

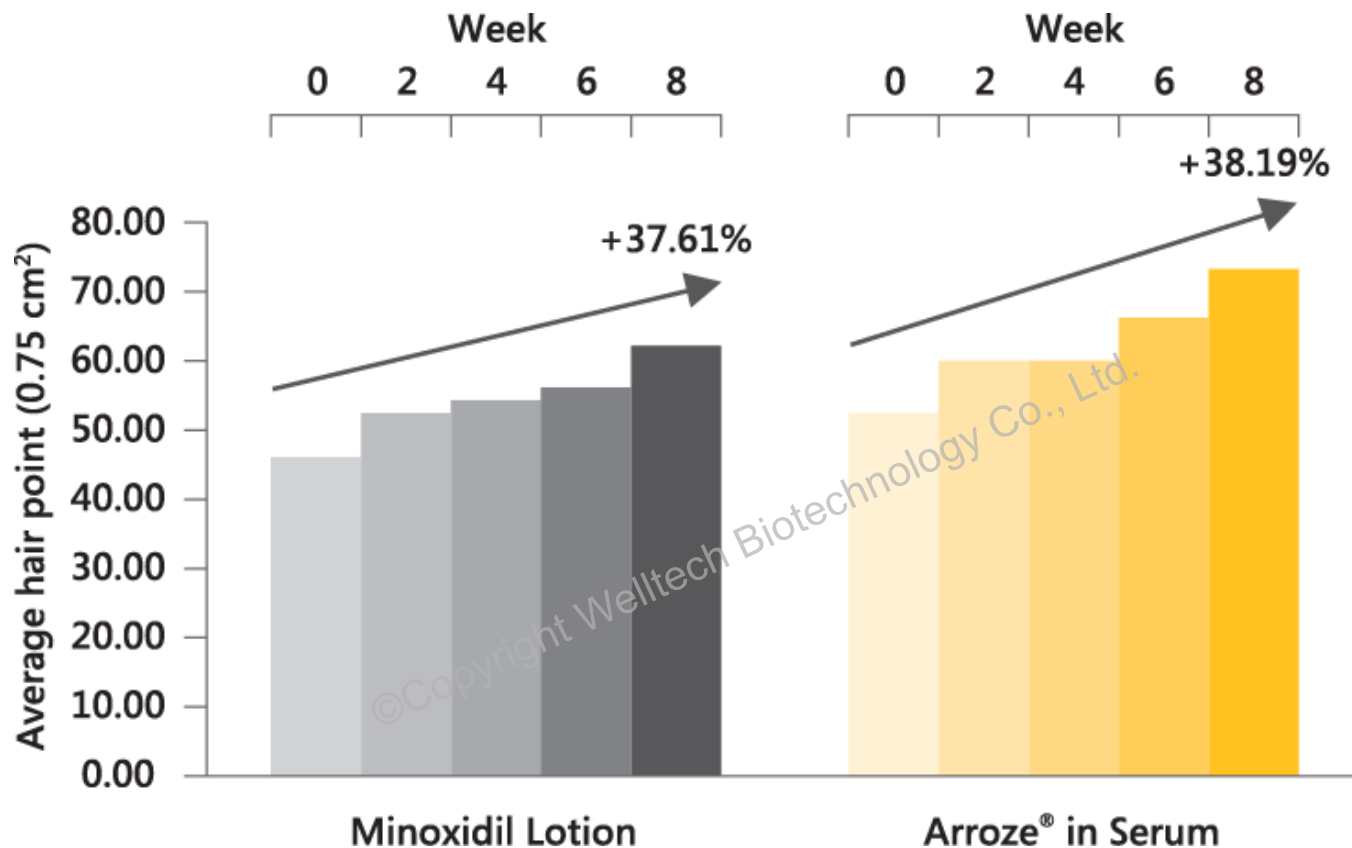
Apply 1 drop on specific area scalp (0.5
cm x 1.5 cm) and gentle massage for 30
seconds once daily before bed



Evaluate by photographing and hair
counting

Result: Hair Growth Promotion

- **Arroze®** could increase hair density 38.19% comparable to standard drug for anti-hair loss in 8 weeks.



Result: Clinical Improvement

The photographs of human volunteers on before (left) and after use Arroze[®] serum (right)



Conclusion

- **Arroze®** hair serum exhibited hair growth promotion effect as well as the standard drug, minoxidil lotion.
- Continuous use of **Arroze®** hair serum could enhance hair growth obviously since first month.
- No hypersensitivity reaction and irritation found in any volunteers.

Product Application & Reference Product

Arroze®

Application

- **Hair Growth Product**
(Serum, Treatment, Essence, etc.)
- **Recommended dosage :**
5-9% (Prevent), 10-15% (Treatment)
- **Usage directions :**
 - Disperse Arroze® in sufficient DI water with initial concentration not more than 40% w/w, stir until homogenous suspension are obtained.
 - Arroze® should be processed under 50 °C in the pH range 3-9 and limit alcohol in final formulation not more than 30%.



Reference Product

NANOVECH Hair Tonic

สินค้ายอดนิยม  **NANOVECH**
โทนิคสเปรย์ เร่งผมยาว
NANOVECH : Tonic Promote Hair Growth



~~850~~
765.-

 nanovechshop  www.nanovech.lwnshop.com

 **NANOVECH** **Nanovech Hair Tonic**

แฮร์โทนิค อนุภาคนาโน บำรุงรากผม
ถึงขั้น Stemcell กระตุ้นการงอก
ของเส้นผม เร่งผมให้ยาวเร็วขึ้น
อุดมไปด้วยวิตามินจากรำข้าวเจ้า
และข้าวบาเล่ ช่วยให้ผมแข็งแรง
ไม่หลุดร่วง มีวอลุ่ม จัดทรงง่าย

Promote Hair Growth



เร่งผมยาว กระตุ้นการงอก ผมจัดทรงง่าย

Reference Product

NANOVECH Brow Boost Serum

สินค้าแนะนำ
เซรั่มปลูก คิ้ว หนวด จอน
NANOVECH : Brow Boost Serum



~~550~~
495.-



nanovechshop  www.nanovech.lnwshop.com



NANOVECH

Review



Reference Product

RISE Hair Serum

R / S E
Natural Innovation

แก้ปัญหาผมร่วง สร้างผมใหม่
ด้วยนวัตกรรมจากธรรมชาติ



100% NATURAL
ACTIVES

ปฏิกิริยา 3 ขั้นตอนสร้างผมใหม่ใน 1 เดือน



PREVENT
ผมขาดร่วงน้อยลง
2 สัปดาห์



REPAIR
ฟื้นฟูสภาพหนังศีรษะ
4 สัปดาห์



REVIVE
สร้างผมขึ้นใหม่ รากผมแข็งแรง
7-10 สัปดาห์

TOTAL HAIRLOSS
SOLUTION

R / S E

Pure and natural hair serum
extracted from stern selections
of the world's best quality
rice-bran and exclusive
natural ingredients. Highly
efficient in providing essential
nutrition for scalp and hair
follicles resulting in hairloss
prevention and regrowth
without causing any irritation.



R / S E



"NATURAL HAIR SERUM"

Reference Product

RIEL Hair Tonic & Serum



Take Home Message

Arroze®

Key Property

- Natural active ingredient
- Easy to use : Well dispersed in water and suitable for various formulation.
- Absorbed directly to target site via *transfollicular* route.

Key Benefits

- Prevent hair loss
- Promote hair growth
- Transfollicular absorption
- No skin irritation
- Water dispersible
- Alcohol free formulation

Q & A

- Please feel free to ask any question!
- Further Contact
email: weerapon.h@welltechbio.com



Arroze®

The Miracle of Rice