

**SURAT TUGAS**

Nomor: 127-R/UNTAR/PENELITIAN/IX/2025

Rektor Universitas Tarumanagara, dengan ini menugaskan kepada saudara:

**SIUFUI HENDRAWAN, dr., M.Biomed., Dr.**

Untuk melaksanakan kegiatan penelitian/publikasi ilmiah dengan data sebagai berikut:

Judul : DHT-based Induction of Androgenic Alopecia in Mice Models  
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Demikian Surat Tugas ini dibuat, untuk dilaksanakan dengan sebaik-baiknya dan melaporkan hasil penugasan tersebut kepada Rektor Universitas Tarumanagara

24 September 2025

**Rektor**



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# SURAT PENCATATAN CIPTAAN

Dalam rangka perlindungan ciptaan di bidang ilmu pengetahuan, seni dan sastra berdasarkan Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta, dengan ini menerangkan:

Nomor dan tanggal permohonan : EC002025131516, 15 September 2025

## Pencipta

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Kewarganegaraan : Indonesia

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Kewarganegaraan : Indonesia

Jenis Ciptaan : **Buku Panduan/Petunjuk**  
Judul Ciptaan : **DHT-based Induction of Androgenic Alopecia in Mice Models**

Tanggal dan tempat diumumkan untuk pertama kali di wilayah Indonesia atau di luar wilayah Indonesia : 15 September 2025, di Kota Adm. Jakarta Barat

Jangka waktu perlindungan : Berlaku selama hidup Pencipta dan terus berlangsung selama 70 (tujuh puluh) tahun setelah Pencipta meninggal dunia, terhitung mulai tanggal 1 Januari tahun berikutnya.


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	<p><b>STANDARD OPERATING PROCEDURE</b> <b>(SOP)</b></p>	Document Num.:
		Release date:
	<p>DHT-based Induction of Androgenic Alopecia in Mice Models</p>	Effective date:
Version: 1		
First draft: THCT		
		Approved by:

**Materials/Equipments:**

- Analytical balance
- Digital balance
- Spatula
- Biological safety cabinet Class IIA (BSC)
- Freezer -80 or -20°C
- Incubator

**Solutions/Medium:**

- Stanolone (Dihydrotestosterone/DHT) (TCI Cat #A0462)
- Ethanol (Supelco Cat #64-17-5)
- Sterile corn oil (Solarbio Cat #C7031)
- Ketamine (Agrovet Market, Ket-A-100®)
- Xylazine (Interchemie, Xyla)

**Consumables:**

- Nitrile gloves
- Surgical mask
- Weighing boat
- 15 mL sterile conical tube
- 50 mL sterile conical tubes
- 1.5 mL sterile microtubes
- Aluminum foil
- 70% ethanol spray
- Micropipettes and sterile tips
- Parafilm
- 1 mL syringes 26G
- DHT (Dihydrotestosterone) ELISA Kit (Elabscience Cat #E-EL-0031)

## 1. Preparation of DHT Stock Solution

*DHT 12.5 mg/mL in ethanol*

- A 15 mL conical tube and 1.5 mL microtubes were wrapped in aluminum foil to protect the solution from light, as DHT is light-sensitive.
- 100 mg of DHT was weighed using an analytical balance in a weighing boat and transferred into the conical tube inside the BSC.
- 8 mL of ethanol was added to the tube to dissolve the DHT.
- The mixture was resuspended using a micropipette until the powder was completely dissolved.
- The stock solution was aliquoted into 1.5 mL microtubes in 250  $\mu$ L volumes and sealed with parafilm.
- Aliquots were stored at  $-80^{\circ}\text{C}$  for long-term storage or at  $-20^{\circ}\text{C}$  for short-term use, protected from light.

## 2. Preparation of DHT Solution

*DHT 0.25 mg/mL in sterile corn oil*

- 50 mL conical tubes were wrapped in aluminum foil to protect the solution from light.
- 8.82 mL of sterile corn oil was aliquoted into each 50 mL conical tube and sealed with parafilm.
- An aliquot of the 12.5 mg/mL DHT stock solution aliquot was removed from the freezer and thawed to room temperature.
- 180  $\mu$ L of the DHT stock solution was added to the corn oil and mixed thoroughly using a micropipette until fully homogenized.

## 3. DHT Injection

DHT was administered intraperitoneally at a dose of 1 mg/kg body weight (BW)

- Mice were weighed prior to each injection.
- The injection volume was calculated based on each mouse's body weight to achieve a dose of 1 mg/kg BW.
- The DHT solution (0.25 mg/mL) was drawn into 1 mL syringes fitted with 26G needles.
- Intraperitoneal injection of DHT were administered once daily for three consecutive days, followed by injections three times per week thereafter.

## 4. Blood Collection and Processing

Total blood samples were collected to confirm the development of androgenic alopecia.

- At the endpoint of the study, mice were anesthetized with ketamine (100 mg/mL) at a dose of 150 mg/kg BW and xylazine (20 mg/mL) at 100 mg/kg BW.
- Blood was collected via intracardiac puncture using a 1 mL syringe with a 26G needle through exsanguination.
- The collected blood samples were immediately transferred into microtubes.
- Samples were incubated at  $37^{\circ}\text{C}$  for 2 hours to allow clotting.

- Samples were centrifuged at 1000 ×g for 15 minutes to separate the serum.
- The serum (supernatant) was carefully pipetted into new microtubes and stored at -80°C for further analysis.

## **5. Androgenic Alopecia Confirmation**

Androgenic alopecia was confirmed through macroscopic visual inspection, characterized by reduced hair density and the presence of miniaturized, thin hairs in the affected areas. Serum DHT levels were quantified using an enzyme-linked immunosorbent assay (ELISA), following the manufacturer's instructions. As a reference, normal physiological serum DHT levels in adult male C57BL/6 mice are approximately 0.2 ng/mL, whereas AGA-induced adult male C57BL/6 mice typically exhibit elevated levels of approximately 2 ng/mL.