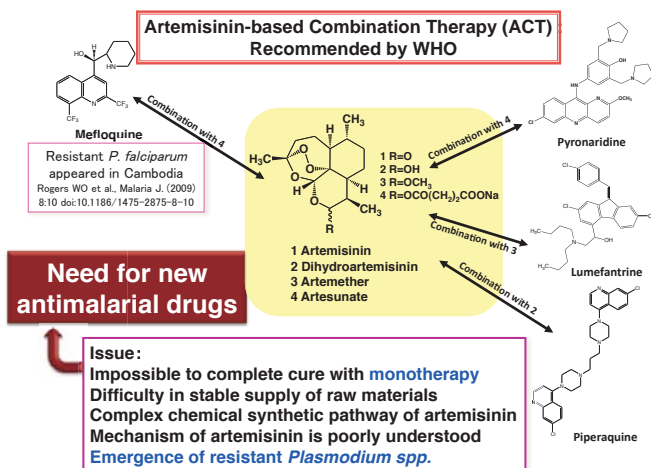


# Non-oral antimalarial drug development research

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**New Antimalarial Candidates**

**N-89**  
特許 第4382898号  
特願 2014-214605  
特願 2014-214606

**N-251**  
特許 第4289911号  
米特許 US 7, 407, 984 B2  
ヨーロッパ (5カ国) 1496056

	N-251	N-89
Activity	High	High
Cure or not	Cure	Cure
Manufacturing process	Multiple process → high cost	Simple process → inexpensive
Mass produce	Difficult partially	No problem
Dosage form	Difficult?	Difficult?

## The Improvement of Endoperoxides Formulation

**N-89, N-251**

- multiple treatment in oral
- short half time without accumulation in the body
- insoluble in water

**To use of infants....**

- hurdle of oral treatment
- difficult to multiple treatment
- difficult to injection in poor medical facility

**Trial as transdermal type of endoperoxides**

**Merit:**

- stable drug level in the blood for long time
- no affect with hepatic first pass effect
- suitable for infant and severe patients
- easy to drug handling and low side effect

**Characteristics for transdermal type:**

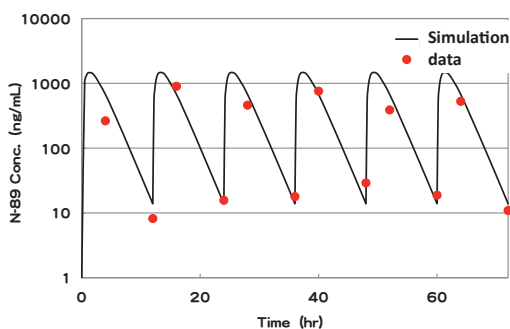
- small molecule (< MW:500)
- appropriate hydrophobicity

## Trial of non-oral Endoperoxides (example)

	Trial picture	Results	Volume
Ointment		<ul style="list-style-type: none"> <li>hydrophilic agent</li> <li>mixed ratio</li> <li>Optimization of volume</li> </ul>	wide
Liquid form		<ul style="list-style-type: none"> <li>easy to exposure</li> <li>improvement of contents</li> <li>Optimization of volume</li> </ul>	narrow
Film type		<ul style="list-style-type: none"> <li>ratio of mixed components</li> <li>stability or not</li> <li>???</li> </ul>	narrow

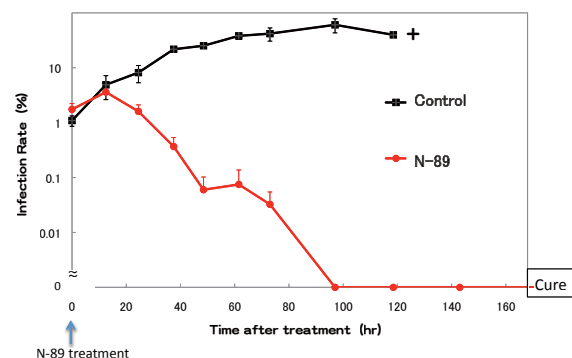
## Pharmacokinetic Study of Amphiphile-N-89

N-89: 73 mg/kg, 2 times/days x 3 days (Amphiphile-N-89)



## The Antimalarial and Cure Effect of Amphiphile-N-89 *in vivo*

Amphiphile-N-89 (73 mg/kg, 2 times/day x 3 days, transdermal)



**Transdermal-N-89 have antimalarial and cure effect for malaria**