

Developed by









## Dapivirine (DPV)

Supported by

## **Developer(s)**

Janssen Pharmaceuticals Originator https://www.janssen.com





Janssen Pharmaceuticals is a subsidiary company of Johnson & Johnson headquartered in Beerse, Belgium. They focus on manufacturing and developing pharmaceutical products for use in areas such as, Immunology, Infectious Diseases & Vaccines, Pulmonary Hypertension, Cardiovascular & Metabolism, Oncology, and Neuroscience.



Dapivirine Chemical Structure

Sourced from Drugbank

## **Drug information**

## **Associated long-acting platforms**

Intra-vaginal ring

## **Administration route**

Topical (Vaginal)

## Therapeutic area(s)

HIV

### Use case(s)

Pre-Exposure Prophylaxis (PrEP)

## Use of drug

#### Ease of administration

Administered by a community health worker Administered by a nurse Self-administered

#### User acceptance

Not provided

## Dosage

#### Available dose and strength

25 mg of dapivirine in the monthly ring

#### Frequency of administration

once a month

#### Maximum dose

25 mg

#### **Recommended dosing regimen**

Not provided

#### **Additional comments**

Not provided

#### Dosage link(s)

Not provided

## **Drug information**

#### Drug's link(s)

Not provided

#### Generic name

Dapivirine

#### Brand name

Not provided

#### Compound type

Small molecule

#### Summary

Dapivirine (DPV) is a diarylpyrimidine non-nucleoside reverse transcriptase inhibitor (NNRTI) marketed as a monthly intravaginal silicone ring for the prevention of HIV-1 infection. NNRTIs function by mechanistically binding to the HIV reverse transcriptase enzyme, thereby inhibiting viral replication. Other topical microbicide formulations of dapivirine include film and gel products that are applied directly to the rectum and/or vagina to prevent the sexual transmission of HIV. Long-acting DPV intravaginal rings are constructed from a malleable silicone elastomer matrix that releases DPV over a 28-day period. DPV intravaginal rings are self-inserted and provide women with a discreet HIV PrEP option that reduces the risk of HIV infection by 31-37% (IPM 027 & ASPIRE).

#### Approval status

Dapivirine Vaginal Monthly Ring 25mg has received a positive opinion from European Union and it has received recommendation for its use outside EU. DVR has been approved as a HIV PrEP to reduce the risk of a woman getting infected with HIV-1 through vaginal intercourse in African countries such as South Africa, Zimbabwe, Malawi, Botswana, Zambia, Kenya, Uganda, Namibia, Rwanda, Eswatini and Lesotho. However, DVR has been rejected by United States and it is under clinical hold in United Republic of Tanzania.

#### **Regulatory authorities**

Dapivirine Vaginal Ring 25mg monthly is a non-nucleoside reverse transcriptase inhibitor that was first approved by South African Health Products Regulatory Authority (SAHPRA) followed by other African regulatory bodies. DVR is indicated for use by cisgender women as a PrEP to reduce the risk of a woman getting infected by HIV-1 during vaginal intercourse.

## **Delivery device(s)**

No delivery device

## Scale-up and manufacturing prospects

#### Scale-up prospects

DPV is manufactured commercially through a well-defined synthetic chemical process and undergoes a micronisation procedure to improve drug dispersion within the silicon intravaginal ring. The current DPV ring formulation (Ring-004) contains 25mg of micronised drug product and is produced with NuSil<sup>™</sup> DDU-4870 silicone elastomer using addition-curing to prevent the formation of undesirable volatile alcohol byproducts. This formulation provides high pharmacokinetic exposure with low overall manufacturing costs. Novel additive manufacturing techniques (e.g. APF) could provide new formulations.

#### Tentative equipment list for manufacturing

For ring manufacture: Injection molding machine, mixer, automated inspection and packaging machines.

#### Manufacturing

Manufacturing is a non-standard four stage workflow process: (1) preparation of the master batch, (2) pre-mix formation, (3) ring construction using injection additioncuring, and (4) packaging/inspection. For DPV Compound: stability testing indicates that the chemical compound can be stored for up to 6 months at 40°C and 96 months at 25°C in the pre-specified commercial packaging. DPV is photo-stable. For Finished Ring Product: stability testing shows that the product can be stored for 48 months at 30°C. The DPV ring product is photosensitive and should be stored away from light sources.

#### Specific analytical instrument required for characterization of formulation

For DPV Compound: HPLC (determine chemical purity), GC (residual solvents), laser diffraction (determine particle size), Karl Fischer titration (determine water content) and FT-IR & DSC (chemical identification). For Finished Ring Product: HPLC (determine dissolution, content uniformity and degradation products), compression testing machine (determine tensile and compression properties).

## **Clinical trials**

### MTN-029/IPM 039

#### Identifier

NCT02808949

#### Link

https://clinicaltrials.gov/ct2/show/NCT02808949

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the pharmacokinetic profile of the Dapivirine vaginal ring in lactating women.

#### Interventions

#### **Intervention 1**

Drug: Dapivirine

#### Countries

United States of America

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2015-02-01

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

#### **Actual Primary Completion Date**

2018-03-03

## Actual Completion Date

2018-03-03

#### **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

Accepts lactating individuals

Yes

Accepts healthy individuals Yes

#### Comments about the studied populations

Women aged 18 and over who are able and willing to express breast milk twice a day or more over the duration of the drug exposure study. After initiation of the drug product, participants must not provide any subsequently expressed breast milk to their children or to others for consumption during the study.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

16

#### Allocation

Not provided

#### Intervention model

Single group assignment

#### Intervention model description

Not provided

#### Masking

Open label

#### Masking description

None (Open Label)

### Frequency of administration

Other : "Intravaginal ring inserted for two weeks "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

Туре	Title	Content	Link
Link	Pharmacokinetics of		https://doi.org/10.1128/aac.
	Dapivirine Transfer		18
	into Blood Plasma,		
	Breast Milk, and		
	Cervicovaginal Fluid of		
	Lactating Women		
	Using the Dapivirine		
	Vaginal Ring		

## **IPM 035**

#### Identifier

#### NCT02858024

#### Link

https://clinicaltrials.gov/ct2/show/NCT02858024

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the effects of tampon use and menses on the pharmacokinetics of Dapivirine vaginal ring-004 in HIV-uninfected women.

#### Interventions

#### Intervention 1 Drug: Dapivirine Vaginal Ring-004 and no tampons

**Intervention 2** Drug: Dapivirine Vaginal Ring-004 with tampons

#### **Intervention 3**

Drug: Dapivirine Vaginal Ring-004 with no menses

#### **Intervention 4**

Drug: Dapivirine Vaginal Ring-004 and same ring inserted after menses

#### **Intervention 5**

Drug: Dapivirine Vaginal Ring-004 and new ring inserted after menses

#### Countries

Not provided

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date

Not provided

#### Actual Start Date

2015-01-12

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

## Estimated Completion Date

Not provided

# Actual Primary Completion Date 2016-04-16

# Actual Completion Date 2016-04-16

### **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

## Accepts pregnant individuals

No

Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged between 18 and  $\leq$  40 years.

#### Health status

Negative to : HIV, HBV, HCV

#### Study type

Interventional (clinical trial)

#### Enrollment

16

#### Allocation

Randomized

#### Intervention model

Cross-over assignment

#### Intervention model description

Not provided

#### Masking

Open label

#### **Masking description**

None (Open Label)

#### Frequency of administration

Other : "Two consecutive 28-day intra-vaginal ring treatment periods separated by a washout period of 28 days. "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

Not provided

### **IPM 054**

#### Identifier

NCT05416021

#### Link

https://clinicaltrials.gov/ct2/show/NCT05416021

#### Phase

Phase I

#### Status

Active, not recruiting

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Compare the relative bioavailability in plasma and vaginal fluid of the 25mg Dapivirine vaginal ring-004 and 100 mg Dapivirine vaginal ring-008 in HIV-uninfected women.

#### Interventions

Intervention 1 Drug: Dapivirine

#### Countries

South Africa

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date

Not provided

## Actual Start Date

2022-08-01

## Anticipated Date of Last Follow-up

Not provided

# Estimated Primary Completion Date 2024-04-01

## Estimated Completion Date 2024-04-01

## Actual Primary Completion Date Not provided

## Actual Completion Date Not provided

### **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

#### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 18-45 inclusive.

#### Health status

Negative to : HIV, HBV, HCV

#### Study type

Interventional (clinical trial)

#### Enrollment

110

#### Allocation

Randomized

#### Intervention model

Cross-over assignment

#### Intervention model description

Not provided

#### Masking

Open label

#### **Masking description**

None (Open Label)

#### Frequency of administration

Other : "25 mg dapivirine ring (Ring-004) for 90 days (changed every 30 days) and the 100 mg dapivirine ring (Ring-008) used continuously for 90 days. "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### **Key resources**

Not provided

### MTN-036/IPM-047

#### Identifier

NCT03234400

#### Link

https://clinicaltrials.gov/ct2/show/NCT03234400

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the safety and pharmacokinetics of extended duration Dapivirine vaginal rings.

#### Interventions

#### **Intervention 1** Combination Product: Dapivirine Vaginal Ring, 25 mg

#### **Intervention 2**

Combination Product: Dapivirine Vaginal Ring, 100 mg

#### **Intervention 3**

Combination Product: Dapivirine Vaginal Ring, 200 mg

#### Countries

United States of America

#### Sites / Institutions

Not provided

#### **Trials dates**

#### Anticipated Start Date

Not provided

#### Actual Start Date

2017-12-04

#### Anticipated Date of Last Follow-up

Not provided

### Estimated Primary Completion Date

Not provided

#### Estimated Completion Date Not provided

## Actual Primary Completion Date 2018-10-23

# Actual Completion Date 2019-01-23

#### **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals No

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 18-45 inclusive.

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

49

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

Not provided

#### Masking

Single blind masking

#### Masking description

Single (Participant)

#### Frequency of administration

Other : "Participants will insert one IVR for 13 weeks (100 mg IVR or 200 mg IVR) or one IVR (25 mg VR) to be replaced every 4 weeks for 8 weeks then worn for an additional 5 weeks for a total of 13 weeks. "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### **Key resources**

Туре	Title	Content	Link
Link	Phase 1		https://doi.org/10.1002/jia2.
	pharmacokinetics and		
	safety study of		
	extended duration		
	dapivirine vaginal		
	rings in the United		
	States		

Туре	Title	Content	Link
Link	Users' Preferred		https://doi.org/10.1089/aid.2
	Characteristics of		
	Vaginal Rings for HI	V	
	Prevention: A		
	Qualitative Analysis	of	
	Two Phase I Trials		

## DREAM

#### Identifier

NCT02862171

#### Link

https://clinicaltrials.gov/ct2/show/NCT02862171

#### Phase

Phase III

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

A follow-on, open label trial to assess patient adherence and continued safety of the 25mg Dapivirine vaginal ring-004 in HIV-negative women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring-004

#### Countries

South Africa

Uganda

#### Sites / Institutions

Not provided

#### **Trials dates**

#### Anticipated Start Date

Not provided

#### Actual Start Date

2016-07-12

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### Estimated Completion Date Not provided

# Actual Primary Completion Date 2019-01-11

# Actual Completion Date 2019-01-11

### **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

#### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Participants are required to be previously enrolled in the IPM 027 trial.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

941

#### Allocation

Not provided

#### Intervention model

Single group assignment

#### Intervention model description

Not provided

#### Masking

Open label

#### **Masking description**

None (Open Label)

#### Frequency of administration

Monthly

## Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

## Key resources

Туре	Title	Content	Link
Link	Safety, adherence, ar	nd	https://doi.org/10.1016/S23
	HIV-1 seroconversion		3018(20)30300-3
	among women using		
	the dapivirine vaginal		
	ring (DREAM): an		
	open-label, extension		
	study		

## MTN-024/IPM031

#### Identifier

NCT02010593

#### Link

https://clinicaltrials.gov/ct2/show/NCT02010593

#### Phase

Phase II

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the safety of the Dapivirine vaginal ring when administered once every 28 days for twelve weeks in postmenopausal women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

Intervention 2 Drug: Placebo Vaginal Ring

#### Countries

United States of America

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2013-12-01

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

### Actual Primary Completion Date

2015-04-01

## Actual Completion Date

2015-04-01

#### **Studied populations**

#### Age Cohort

- Adults
- Older Adults

Genders

#### Cisgender female

#### Accepts pregnant individuals

No

Accepts lactating individuals

Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 45-65 inclusive.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

96

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

Not provided

#### Masking

Double-blind masking

#### Masking description

Double (Participant, Investigator)

#### Frequency of administration

Other : "Rings inserted once every 28 days for twelve weeks "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

Туре	Title	Content	Link
Link	Acceptability of the		https://doi.org/10.1089/apc.
	Dapivirine Vaginal		
	Ring in		
	Postmenopausal US		
	Women		
Link	Phase 2a Safety,		https://doi.org/10.1093/cid/d
	Pharmacokinetics, and		
	Acceptability of		
	Dapivirine Vaginal		
	Rings in US		
	Postmenopausal		
	Women		

## ASPIRE

#### Identifier

#### NCT01617096

#### Link

https://clinicaltrials.gov/ct2/show/NCT01617096

#### Phase

Phase III

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the effectiveness and safety of the Dapivirine vaginal ring in preventing HIV-1 infection in women at high risk of acquiring HIV-1.

#### Interventions

Intervention 1 Combination Product: Dapivirine Vaginal Ring

#### Intervention 2 Combination Product: Placebo Ring

#### Countries

Malawi

South Africa

Uganda

Zimbabwe

#### Sites / Institutions

Not provided

#### **Trials dates**

#### **Anticipated Start Date**

Not provided

#### **Actual Start Date**

2012-07-24

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

## Estimated Completion Date

Not provided

## Actual Primary Completion Date

2015-07-03

#### **Actual Completion Date**

2015-12-01

#### **Studied populations**

#### Age Cohort

Adults
#### Genders

• Cisgender female

Accepts pregnant individuals No

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 18-45 years inclusive.

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

2629

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

## Masking

Double-blind masking

## Masking description

Double (Participant, Investigator)

### Frequency of administration

Other : "Rings inserted once every 28 days for twelve consecutive months "

## Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

Туре	Title	Content	Link
Link	Patterns of Adherence		https://doi.org/10.1097/qai.(
	to a Dapivirine Vaginal		
	Ring for HIV-1		
	Prevention Among		
	South African Women		
	in a Phase III		
	Randomized		
	Controlled Trial		

Туре	Title	Content	Link
Link	Experiences with simultaneous use of contraception and the vaginal ring for HIV prevention in sub- Saharan Africa		https://doi.org/10.1186/s129 021-01321-5
Link	Acceptability of the Dapivirine Vaginal Ring for HIV-1 Prevention and Association with Adherence in a Phase III Trial		https://doi.org/10.1007/s104
Link	Risk of HIV-1 acquisition among South African women using a variety of contraceptive methods in a prospective study		https://doi.org/10.1097/qad.
Link	Acquisition of Sexually Transmitted Infections among Women Using a Variety of Contraceptive Options: A prospective Study among High-risk African Women		https://doi.org/10.1002/jia2.

Туре	Title	Content	Link
Link	Clinical and Virologic Outcomes Following Initiation of Antiretroviral Therapy Among Seroconverters in the Microbicide Trials Network-020 Phase III Trial of the Dapivirine Vaginal Ring		https://doi.org/10.1093/cid/o
Link	Vaginal Ring Use in a Phase 3 Microbicide Trial: A Comparison of Objective Measures and Self-reports of Non-adherence in ASPIRE		https://doi.org/10.1007/s104
Link	Use of a Vaginal Ring Containing Dapivirine for HIV-1 Prevention in Women		https://doi.org/10.1056/nejm

## **MTN-034**

#### Identifier

#### NCT03593655

#### Link

https://clinicaltrials.gov/ct2/show/NCT03593655

#### Phase

Phase II

#### Status

Completed

#### Sponsor

National Institute of Allergy and Infectious Diseases (NIAID)

#### More details

Not provided

#### Purpose

Evaluate the adherence and safety of a Dapivirine vaginal ring with oral emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) in adolescent and young adult females.

#### Interventions

Intervention 1 Device: Dapivirine Vaginal Ring

#### **Intervention 2**

Drug: FTC/TDF

#### Countries

South Africa

Uganda

Zimbabwe

#### Sites / Institutions

Not provided

**Trials dates** 

#### **Anticipated Start Date**

Not provided

#### **Actual Start Date**

2019-01-14

## Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

# Estimated Completion Date Not provided

# Actual Primary Completion Date 2021-09-09

# Actual Completion Date 2021-09-09

### **Studied populations**

Age Cohort

Adolescents

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

#### Accepts lactating individuals

No

Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 16-21 inclusive.

#### Health status

Negative to : HIV, HBV

#### Study type

Interventional (clinical trial)

#### Enrollment

247

#### Allocation

Randomized

#### Intervention model

Cross-over assignment

## Intervention model description

Not provided

#### Masking

Open label

## Masking description

None (Open Label)

## Frequency of administration

Monthly

### Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### **Key resources**

## HOPE

#### Identifier

NCT02858037

#### Link

https://clinicaltrials.gov/ct2/show/NCT02858037

#### Phase

Phase III

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

A follow-on, open label trial to assess adherence to and the continued safety of a Dapivirine vaginal ring in HIV-uninfected women.

#### Interventions

#### Intervention 1

Combination Product: Dapivirine Vaginal Ring

#### Countries

Malawi

South Africa

Uganda

Zimbabwe

#### **Sites / Institutions**

Not provided

#### **Trials dates**

**Anticipated Start Date** 

Not provided

#### Actual Start Date

2016-07-18

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

## Actual Primary Completion Date

2018-10-10

#### **Actual Completion Date**

2018-10-10

### **Studied populations**

#### Age Cohort

• Adults

Genders

#### Cisgender female

#### Accepts pregnant individuals

No

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 18-40 previously enrolled in MTN-020 (ASPIRE).

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

1456

#### Allocation

Not provided

#### Intervention model

Single group assignment

#### Intervention model description

Participants will receive a silicone elastomer vaginal matrix ring containing 25 mg of Dapivirine to be replaced each month for a total period of 12 months of use.

## Masking

Open label

## Masking description

None (Open Label)

## Frequency of administration

Monthly

## Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

## Key resources

Туре	Title	Content	Link
Link	Safety, uptake, and use of a dapivirine vaginal ring for HIV-1 prevention in African women (HOPE): an open-label, extension study		https://doi.org/10.1016/s235

Туре	Title	Content	Link
Link	Sharing Objective		https://doi.org/10.1007/s104
	Measures of		020-03026-6
	Adherence to a		
	Vaginal Microbicide		
	Promotes Candor		
	About Actual Use and		
	Bolsters Motivation to		
	Prevent HIV		

## MTN-042

#### Identifier

NCT03965923

#### Link

https://clinicaltrials.gov/ct2/show/NCT03965923

#### Phase

Phase III

#### Status

Active, not recruiting

#### Sponsor

National Institute of Allergy and Infectious Diseases (NIAID)

#### More details

Not provided

#### Purpose

Evaluate infant and maternal safety of the Dapivirine vaginal ring and daily oral Truvada in HIV-uninfected pregnant women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

Intervention 2 Drug: Truvada Tablet

## Countries

Malawi

South Africa

Uganda

Zimbabwe

#### **Sites / Institutions**

Not provided

#### **Trials dates**

#### **Anticipated Start Date**

Not provided

#### **Actual Start Date**

2020-01-09

## Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

2024-06-30

# Estimated Completion Date 2024-06-30

## Actual Primary Completion Date

Not provided

## Actual Completion Date

Not provided

### **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

Accepts pregnant individuals Yes

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged 18-40 years inclusive.

#### **Health status**

Negative to : HIV, HBV

#### Study type

Interventional (clinical trial)

#### Enrollment

Not provided

#### Allocation

Randomized

#### Intervention model

Sequential assignment

#### Intervention model description

## Masking

Open label

## Masking description

None (Open Label)

## Frequency of administration

Monthly

## Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

## Key resources

## **IPM 024**

#### Identifier

NCT02920827

#### Link

https://clinicaltrials.gov/ct2/show/NCT02920827

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the tolerability and safety of the dapivirine ring as compared to a placebo ring when inserted for four weeks in HIV-uninfected women.

#### Interventions

Intervention 1 Combination Product: Dapivirine Vaginal Ring

#### Intervention 2

Combination Product: Placebo Vaginal Ring

## Countries

Belgium

### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2009-08-01

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

## Actual Primary Completion Date

2010-04-01

## Actual Completion Date

2010-04-01

#### **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

#### Accepts pregnant individuals

No

### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

## Comments about the studied populations

Women aged 18-40 years inclusive.

## Health status

Negative to : HIV, HBV, HCV

### Study type

Interventional (clinical trial)

#### Enrollment

16

### Allocation

Randomized

### Intervention model

Parallel Assignment

## Intervention model description

Not provided

### Masking

Double-blind masking

## Masking description

Double (Participant, Investigator)

### Frequency of administration

Other : "Ring used continuously for 28 days "

## Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

## IPM 027

#### Identifier

NCT01539226

#### Link

https://clinicaltrials.gov/ct2/show/NCT01539226

#### Phase

Phase III

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evalute the efficacy and safety of a Dapivirine vaginal matrix ring in healthy HIVuninfected women.

#### Interventions

Intervention 1 Combination Product: 25 mg Dapivirine Vaginal Ring

#### **Intervention 2**

Combination Product: Placebo Vaginal Ring

#### Countries

South Africa Uganda

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date Not provided

#### Actual Start Date

2012-03-27

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### Estimated Completion Date Not provided

Actual Primary Completion Date 2016-12-13

#### **Actual Completion Date**

2016-12-13

#### **Studied populations**

#### Age Cohort

Adults

Genders

#### Cisgender female

#### Accepts pregnant individuals

No

Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women participants aged 18-45.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

1959

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

Not provided

### Masking

Double-blind masking

#### Masking description

Double (Participant, Investigator)

## Frequency of administration

Other : "Participants self-administered the rings every 4 weeks for up to 24 months "

#### Studied LA-formulation(s)

Non-Implantable Device

#### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

Туре	Title	Content	Link
Link	Safety and Efficacy of		https://doi.org/10.1056/nejm
	a Dapivirine Vaginal		
	Ring for HIV Prevention		
	in Women		
Link	Assessment of risk		https://doi.org/10.1136/sext
	compensation		2020-054718
	following use of the		
	dapivirine vaginal ring		
	in southwestern		
	Uganda		

## MTN-023/IPM 030

#### Identifier

NCT02028338

#### Link

https://clinicaltrials.gov/ct2/show/NCT02028338

#### Phase

Phase II

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evalute the safety of a 25mg dapivirine vaginal ring in HIV-uninfected adolescent females, when inserted once every 28 days for 24-weeks.

#### Interventions

Intervention 1 Combination Product: Dapivirine Vaginal Ring

#### Intervention 2

Combination Product: Placebo Vaginal Ring

#### Countries

United States of America

#### Sites / Institutions

Not provided

#### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2014-07-27

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

## Actual Primary Completion Date

2016-07-05

## Actual Completion Date

2018-06-08

#### **Studied populations**

#### Age Cohort

Adolescents

#### Genders

• Cisgender female

#### Accepts pregnant individuals

No

## Accepts lactating individuals

No

#### Accepts healthy individuals

Unspecified

### Comments about the studied populations

Participants aged 15-17 inclusive at enrollment.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

96

### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

Not provided

#### Masking

Quadruple-blind masking

## Masking description

Quadruple (Participant, Care Provider, Investigator, Outcomes Assessor)

#### Frequency of administration

Other : "25mg Dapivirine vaginal ring inserted once every 28 days for 24 weeks "

## Studied LA-formulation(s)

Non-Implantable Device

### Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### **Key resources**

Туре	Title	Content	Link
Link	Outline Images		https://doi.org/10.1097/qai.(
	Download Cite Share		
	Favorites Permissions		
	PREVENTION		
	RESEARCH Brief		
	Report: Phase IIa		
	Safety Study of a		
	Vaginal Ring		
	Containing Dapivirine		
	in Adolescent Young		
	Women		

## **IPM 015**

#### Identifier

#### NCT01071174

#### Link

https://clinicaltrials.gov/ct2/show/NCT01071174

#### Phase

Phase I/II

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the safety profile of a Dapivirine intravaginal matrix ring in HIV-uninfected women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

### Intervention 2 Drug: Placebo Vaginal Ring

## Countries

Kenya Malawi South Africa Tanzania, United Republic of

#### **Sites / Institutions**

Not provided

#### **Trials dates**

Anticipated Start Date

Not provided

#### **Actual Start Date**

2010-04-01

## Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

## Estimated Completion Date

Not provided

## Actual Primary Completion Date

2011-05-01

## Actual Completion Date

2011-07-01

## **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

Accepts pregnant individuals No

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged between 18-45 years inclusive.

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

280

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

## Masking

Triple-blind masking

## Masking description

Triple (Participant, Care Provider, Investigator)

### Frequency of administration

Other : "25mg dapivirine vaginal ring inserted every 28 days for 84 days total "

## Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

### Key resources

## **IPM 034**

#### Identifier

NCT01952561

#### Link

https://clinicaltrials.gov/ct2/show/NCT01952561

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the blood and vaginal pharmacokinetics of a 25mg Dapivirine vaginal ring worn for 1, 2, 4, 8 or 12 months.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

#### Countries

Not provided

#### Sites / Institutions

Not provided

#### **Trials dates**

#### Anticipated Start Date

Not provided

#### Actual Start Date

2013-11-01

#### Anticipated Date of Last Follow-up

Not provided

## Estimated Primary Completion Date

Not provided

#### Estimated Completion Date Not provided

# Actual Primary Completion Date 2014-03-01

# Actual Completion Date 2014-05-01

## **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

#### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

## Comments about the studied populations

Women between 18-40 years of age.

#### Health status

Negative to : HIV, HBV, HCV

#### Study type

Interventional (clinical trial)

#### Enrollment

40

#### Allocation

Randomized

### Intervention model

Parallel Assignment

### Intervention model description

Not provided

#### Masking

Open label

### **Masking description**
None (Open Label)

## Frequency of administration

Other : "25mg dapivirine vaginal ring usage over a time period of 1, 2, 4, 8 or 12 months. "

# Studied LA-formulation(s)

Non-Implantable Device

# Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

# **IPM 009B**

#### Identifier

NCT01337583

#### Link

https://clinicaltrials.gov/ct2/show/NCT01337583

#### Phase

Phase III

#### **Status**

Withdrawn

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the efficacy and safety of a Dapivirine vaginal matrix ring for HIV-1 PrEP in women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

# Intervention 2 Drug: Placebo Vaginal Ring

# Countries

Kenya

Malawi

South Africa

# Sites / Institutions

Not provided

# **Trials dates**

# Anticipated Start Date Not provided

#### Actual Start Date

2011-07-01

#### Anticipated Date of Last Follow-up

Not provided

# **Estimated Primary Completion Date**

Not provided

# Estimated Completion Date

Not provided

# Actual Primary Completion Date 2014-07-01

# Actual Completion Date

2014-07-01

# **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals No

Accepts lactating individuals

#### Accepts healthy individuals

Yes

#### Comments about the studied populations

Women aged between 18-40 years.

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

Not provided

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

#### Intervention model description

# Masking

Double-blind masking

# Masking description

Double (Participant, Investigator)

# Frequency of administration

Other : "25mg dapivirine vaginal ring inserted every 28 days for at least 15 months "

# Studied LA-formulation(s)

Non-Implantable Device

# Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

# Key resources

# **IPM 018**

#### Identifier

#### NCT00469768

#### Link

https://clinicaltrials.gov/ct2/show/NCT00469768

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the pharmacokinetics and safety of a 25 mg of Dapivirine intravaginal ring in HIV-uninfected women to determine the release of Dapivirine from the reservoir and matrix.

#### Interventions

# Intervention 1

Drug: Dapivirine Reservoir Intravaginal Ring

# Intervention 2

Drug: Dapivirine Matrix Intravaginal Ring

#### **Intervention 3**

Drug: Placebo Vaginal Ring

#### Countries

Belgium

#### Sites / Institutions

Not provided

#### **Trials dates**

#### Anticipated Start Date

Not provided

#### Actual Start Date

2007-05-01

#### Anticipated Date of Last Follow-up

Not provided

# Estimated Primary Completion Date

Not provided

# Estimated Completion Date Not provided

# Actual Primary Completion Date 2007-08-01

# Actual Completion Date 2007-08-01

#### **Studied populations**

Age Cohort

#### Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

Accepts lactating individuals

No

# Accepts healthy individuals

Yes

## Comments about the studied populations

Women aged between 18-35 years.

#### **Health status**

Negative to : HIV

#### Study type

Interventional (clinical trial)

# Enrollment

24

#### Allocation

Randomized

## Intervention model

Parallel Assignment

#### Intervention model description

Not provided

# Masking

Double-blind masking

# Masking description

Double (Participant, Investigator)

# Frequency of administration

Other : "Intravaginal ring used continuously for 28 days "

# Studied LA-formulation(s)

Non-Implantable Device

# Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

# **IPM 013**

#### Identifier

#### NCT01144676

#### Link

https://clinicaltrials.gov/ct2/show/NCT01144676

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the delivery of dapivirine from matrix intravaginal rings to assess the safety in comparison to placebo intravaginal rings in HIV-uninfected sexually active women.

#### Interventions

Intervention 1 Drug: Dapivirine Vaginal Ring

Intervention 2 Drug: Placebo Vaginal Ring

# Countries

Belgium

# Sites / Institutions

Not provided

### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2010-04-01

#### Anticipated Date of Last Follow-up

Not provided

# Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

# Actual Primary Completion Date

2010-09-01

# Actual Completion Date 2010-09-01

# **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

#### Accepts pregnant individuals

No

## Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

# Comments about the studied populations

Women aged between 18-40 years.

# Health status

Negative to : HIV, HBV, HCV

## Study type

Interventional (clinical trial)

#### Enrollment

45

# Allocation

Randomized

#### Intervention model

Parallel Assignment

# Intervention model description

Not provided

# Masking

Double-blind masking

# **Masking description**

Double (Participant, Investigator)

# Frequency of administration

Other : "Two or three intravaginal rings used over a period of 56 and 57 days for varying durations depending on experimental group "

# Studied LA-formulation(s)

Non-Implantable Device

## Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

# **IPM 001**

#### Identifier

#### NCT00700284

#### Link

https://clinicaltrials.gov/ct2/show/NCT00700284

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the feasibility, safety and tolerability of utilising a vaginal ring delivery system to administer TMC120 (dapivirine).

#### Interventions

Intervention 1 Drug: TMC120 (Dapivirine) Vaginal Ring

# Intervention 2 Drug: Placebo Vaginal Ring

# Countries

Belgium

# Sites / Institutions

Not provided

### **Trials dates**

Anticipated Start Date Not provided

Actual Start Date 2004-10-01

#### Anticipated Date of Last Follow-up

Not provided

# Estimated Primary Completion Date

Not provided

#### **Estimated Completion Date**

Not provided

# Actual Primary Completion Date

2005-01-01

# Actual Completion Date

2005-01-01

#### **Studied populations**

#### Age Cohort

Adults

#### Genders

• Cisgender female

#### Accepts pregnant individuals

No

#### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

# Comments about the studied populations

Women aged between 18-50 years.

# Health status

Negative to : HIV

# Study type

Interventional (clinical trial)

#### Enrollment

12

# Allocation

Non-randomized

#### Intervention model

Cross-over assignment

# Intervention model description

Not provided

#### Masking

Open label

# **Masking description**

None (Open Label)

# Frequency of administration

Weekly

Other : "Placebo intravaginal ring used for an initial one week period followed by intravaginal ring containing 120 mg of TMC120 (dapivirine) for an additional week. "

# Studied LA-formulation(s)

Non-Implantable Device

# Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

# **IPM 008**

#### Identifier

NCT00332995

#### Link

https://clinicaltrials.gov/ct2/show/NCT00332995

#### Phase

Phase I

#### Status

Completed

#### Sponsor

International Partnership for Microbicides, Inc.

#### More details

Not provided

#### Purpose

Evaluate the systemic availability, safety and tolerability of a vaginal ring for the delivery of TMC120 (dapivirine).

#### Interventions

Intervention 1 Drug: TMC120 (Dapivirine) Vaginal Ring

#### Countries

Belgium

#### Sites / Institutions

Not provided

#### **Trials dates**

#### Anticipated Start Date

Not provided

#### Actual Start Date

2005-07-01

#### Anticipated Date of Last Follow-up

Not provided

# Estimated Primary Completion Date

Not provided

## Estimated Completion Date Not provided

# Actual Primary Completion Date 2005-08-01

# Actual Completion Date 2005-08-01

# **Studied populations**

#### Age Cohort

• Adults

#### Genders

• Cisgender female

Accepts pregnant individuals

No

#### Accepts lactating individuals

No

#### Accepts healthy individuals

Yes

# Comments about the studied populations

Women aged 18-50 years.

#### Health status

Negative to : HIV

#### Study type

Interventional (clinical trial)

#### Enrollment

13

#### Allocation

Randomized

#### Intervention model

Parallel Assignment

## Intervention model description

Not provided

#### Masking

Double-blind masking

#### Masking description

Not provided

# Frequency of administration

Weekly

Other : "Intravaginal ring containing 120 mg of TMC120 (dapivirine) used for seven days. "

# Studied LA-formulation(s)

Non-Implantable Device

# Studied route(s) of administration

Topical (Vaginal)

#### Use case

PrEP

#### Key resources

# **Excipients**

## Proprietary excipients used

DDU-4870 is a silicon elastomer product manufactured by NuSil<sup>™</sup> Technology Inc. (Carpinteria, CA, USA). In 2016, NuSil Technology, Inc. merged with Avantor.

# Novel excipients or existing excipients at a concentration above Inactive Ingredients Database (IID) for the specified route of administration

The novel excipient DDU-4870 is used in the final Ring-004 product formulation. DDU-4870 is contained and packaged within food-grade certified polyethylene pails, which have no effect on excipient quality. At room temperature (25°C) DDU-4870 is estimated to maintain chemical stability for 12 months.

#### Residual solvents used

No residual solvent used

# Patent info

## Description

Dapivirine and analogues topical use for the prevention of HIV infection

# **Brief description**

The invention concerns the microbicidal activity of certain pyrimidine or triazine containing non-nucleoside reverse transcriptase inhibitors. The compounds of the present invention inhibit the systemic infection of a human being with HIV, in particular, the present compounds prevent sexual HIV transmission in humans.

# Representative patent

WO03094920

## Category

Composition ; Use

#### Patent holder

Tibotec

#### Exclusivity

Not provided

#### **Expiration date**

May 13, 2023

# Status

Expired

## Description

Dapivirine compounds and analogues (Markush structure)

## **Brief description**

The invention is concerned with pyrimidine derivatives having HIV replication inhibiting properties. The invention further relates to methods for their preparation and pharmaceutical compositions comprising them. The invention also relates to the use of said compounds in the manufacture of a medicament useful for the treatment of subjects suffering from HIV infection

#### **Representative patent**

WO9950250

## Category

compound

## Patent holder

Janssen

#### Exclusivity

Not provided

#### **Expiration date**

March 24, 2019

#### Status

Expired

Supporting material

# **Publications**

Welsh, N. R., Malcolm, R. K., Devlin, B., & Boyd, P. (2019). Dapivirine-releasing vaginal rings produced by plastic freeforming additive manufacturing. International Journal of Pharmaceutics. https://doi.org/10.1016/j.ijpharm.2019.118725

Here we report the first use of an additive manufacturing (AM) technique based on high pressure material jetting of molten thermoplastic for the fabrication of dapivirine (DPV) loaded vaginal rings (VRs). The VRs are compared to those produced conventionally using injection molding (IM). VRs (outer diameter 54.0 mm, crosssectional diameter 4.0 mm) were manufactured by either injection molding or Arburg Plastic Freeforming (APF) - a proprietary droplet deposition modelling (DDM) process, using medical grade thermoplastic polyurethanes (TPUs) loaded with 10% w/w DPV. This unique DDM process was used to produce rings of 100, 50 and 10% matrix infill density. DDM printed VRs with 10% density (57-62 mg drug load) exhibited up to seven-fold increase in DPV release compared to injection molded rings containing 190-194 mg DPV. This work has shown that DDM using the APF technique can be used to manufacture drug delivery devices of varying geometries, densities and surface areas to give precise levels of control over the drug release kinetics. This work presents a new opportunity to increase the release of poorly watersoluble compounds or to achieve desired dosing levels using lower drug loadings than those required using conventional thermoplastic processing techniques.

Malcolm RK, Woolfson AD, Toner CF, Morrow RJ, McCullagh SD. Long-term, controlled release of the HIV microbicide TMC120 from silicone elastomer vaginal rings. J Antimicrob Chemother. 2005 Nov;56(5):954-6. www.doi.org/10.1093/jac/dki326. Epub 2005 Sep 9. PMID: 16155060.

*Objectives*: The feasibility of providing prolonged and controlled release of the experimental non-nucleoside reverse transcriptase inhibitor TMC120 from a silicone vaginal ring in quantities sufficient to maintain a vaginal concentration offering

protection against heterosexual HIV transmission was investigated.

*Methods*: Core-type, silicone elastomer vaginal rings containing TMC120 were manufactured, and *in vitro* release studies performed under sink conditions. The experimental release data, as determined by HPLC, were correlated with estimates of vaginal TMC120 concentrations required to inhibit HIV replication.

*Results*: Continuous, zero-order release of TMC120 from core-type vaginal rings was observed *in vitro* over a 71 day period, equivalent to 136 µg/day. The release rate is predicted to maintain vaginal concentrations of the antiretroviral in the range of several orders of magnitude in excess of reported HIV inhibitory concentration values.

*Conclusions*: Continuous and prolonged zero-order release of TMC120 from a silicone vaginal ring device at quantities predicted to prevent HIV infection was observed.

Diarylaniline Derivatives as a Distinct Class of HIV-1 Non-nucleoside Reverse Transcriptase Inhibitors. Bingjie Qin, Xingkai Jiang, Hong Lu, Xingtao Tian, Florent Barbault, Li Huang, Keduo Qian, Chin-Ho Chen, Rong Huang, Shibo Jiang, Kuo-Hsiung Lee, and Lan Xie. Journal of Medicinal Chemistry, 2010, *53* (13), 4906-4916. www.doi.org/10.1021/jm1002952

By using structure-based drug design and isosteric replacement, diarylaniline and 1,5diarylbenzene-1,2-diamine derivatives were synthesized and evaluated against wild type HIV-1 and drug-resistant viral strains, resulting in the discovery of diarylaniline derivatives as a distinct class of next-generation HIV-1 non-nucleoside reverse transcriptase inhibitor (NNRTI) agents. The most promising compound **37** showed significant EC50 values of 0.003–0.032 µM against HIV-1 wild-type strains and of 0.005–0.604 µM against several drug-resistant strains. Current results also revealed important structure–activity relationship (SAR) conclusions for diarylanilines and strongly support our hypothesis that an NH2 group on the central benzene ring *ortho* to the aniline moiety is crucial for interaction with K101 of the NNRTI binding site in HIV-1 RT, likely by forming H-bonds with K101. Furthermore, molecular modeling studies with molecular mechanism/general Born surface area (MM/GBSA) technology demonstrated the rationality of our hypothesis.

# **Additional documents**

No documents were uploaded

# **Useful links**

- Dapivirine Vaginal Ring 25 mg: Opinion on medicine for use outside EU
- WHO recommends the dapivirine vaginal ring as a new choice for HIV prevention for women
- Dapivirine Vaginal Ring for HIV Prevention
- <u>Pharmacokinetics of Dapivirine Transfer into Blood Plasma, Breast Milk, and</u> <u>Cervicovaginal Fluid of Lactating Women Using the Dapivirine Vaginal Ring</u>
- Phase 1 pharmacokinetics and safety study of extended duration dapivirine vaginal rings in the United States
- Users' Preferred Characteristics of Vaginal Rings for HIV Prevention: A Qualitative Analysis of Two Phase I Trials
- <u>Safety</u>, adherence, and HIV-1 seroconversion among women using the dapivirine vaginal ring (DREAM): an open-label, extension study
- Acceptability of the Dapivirine Vaginal Ring in Postmenopausal US Women
- Phase 2a Safety, Pharmacokinetics, and Acceptability of Dapivirine Vaginal Rings in US Postmenopausal Women
- Patterns of Adherence to a Dapivirine Vaginal Ring for HIV-1 Prevention Among South African Women in a Phase III Randomized Controlled Trial
- Experiences with simultaneous use of contraception and the vaginal ring for HIV prevention in sub-Saharan Africa
- Acceptability of the Dapivirine Vaginal Ring for HIV-1 Prevention and Association with Adherence in a Phase III Trial
- <u>Risk of HIV-1 acquisition among South African women using a variety of contraceptive</u> methods in a prospective study

Acquisition of Sexually Transmitted Infections among Women Using a Variety of Contraceptive Options: A prospective Study among High-risk African Women

- <u>Clinical and Virologic Outcomes Following Initiation of Antiretroviral Therapy Among</u> <u>Seroconverters in the Microbicide Trials Network-020 Phase III Trial of the Dapivirine</u> <u>Vaginal Ring</u>
- Vaginal Ring Use in a Phase 3 Microbicide Trial: A Comparison of Objective Measures and Self-reports of Non-adherence in ASPIRE
- Use of a Vaginal Ring Containing Dapivirine for HIV-1 Prevention in Women
- <u>Safety</u>, uptake, and use of a dapivirine vaginal ring for HIV-1 prevention in African women (HOPE): an open-label, extension study
- Sharing Objective Measures of Adherence to a Vaginal Microbicide Promotes Candor About Actual Use and Bolsters Motivation to Prevent HIV
- Safety and Efficacy of a Dapivirine Vaginal Ring for HIV Prevention in Women
- Assessment of risk compensation following use of the dapivirine vaginal ring in southwestern Uganda
- Outline Images Download Cite Share Favorites Permissions PREVENTION RESEARCH Brief Report: Phase IIa Safety Study of a Vaginal Ring Containing Dapivirine in Adolescent Young Women

# Access principles

## **Collaborate for development**



Consider on a case by case basis, collaborating on developing long acting products with potential significant public health impact, especially for low- and middle-income countries (LMICs), utilising the referred to long-acting technology

# Not provided Share technical information for match-making assessment



Provide necessary technical information to a potential partner, under confidentiality agreement, to enable preliminary assessment of whether specific medicines of public health importance in LMICs might be compatible with the referred to long-acting technology to achieve a public health benefit

# Not provided Work with MPP to expand access in LMICs



In the event that a product using the referred to long-acting technology is successfully developed, the technology IP holder(s) will work with the Medicines Patent Pool towards putting in place the most appropriate strategy for timely and affordable access in low and middle-income countries, including through licensing

# **Comment & Information**