DAEWOONG
PHARMACEUTICAL CO.,LTD.

Making Our World Healthier Together

Daewoong

Pharmaceutical Co., Ltd.

Pharmaceutical
Chemical
Biologics
Finished Dosages
Active Pharmaceutical Ingredient
Out Licensing
Open Collaboration

Group Overview

VISION

A global healthcare group dedicated to improving the quality of life

MISSION

To provide the most beneficial total solutions in pharmaceuticals and services that contribute to improving quality of life of valued consumers

1.2B

Sales USD

Leading Korean Pharmaceuticals

Only 1

Korean Neurotoxin

Approved by FDA

100+

Partners

in Worldwide

2,400+

Employees

in 8 Countries

5

R&D centers

Korea (2), China, India, and Indonesia

8

Manufacturing sites

in 8 Countries

DAEWOONG PHARMACEUTICAL CO.,LTD.

2020
- NABOTA approved by Brazil and Taiwan
- Fexuprazan : Ground in Latin America through an Export Agreement with Brazil and Mexico
- Enavogliflozin: Best-in-class SGLT-2 Inhibitor, completed Phase II clinical trial in Korea.
- Camostat: COVID-19 Inhibitor, Ongoing Phase II
- Niclosamide: COVID-19 Inhibitor, Ongoing Phase1 study in Korea, India and Philippines
- Stem Cell: COVID-19 Inhibitor, Ongoing Phase1 study in Indonesia

2019
- NABOTA approved by USFDA and EU EMA FDA
- Fexuprazan : Best-in-class antiulcerant, completed Phase III clinical trial in Korea.
- DWN 12088 : First-in-Class PRS Inhibitor for IPF Ongoing Phase1 study in Aus.

2018
- NABOTA approved by Health Canada
- BBT-401: The First-in-class Pellino-1 inhibitor for UC Treatment, completed Phase I in the USA
- By acquiring shares in Traphaco, obtained local manufacturing site in Vietnam

2017
- Established Japan Branch
- Launched Indonesia's first biologic product Epodion, gained #1 MS

2016
- Completion of Daewoong Lifescience Lab 'Bio-innovation Center'
- Completion of Osong cGMP Manufacturing Plant
- Received National Award for Quality Management Honor

2015
- Established #1st Biopharmaceutical Manufacturing plant in Indonesia
- Acquired HANALL BIOPHARMA Co. Ltd

2014
- Established Daewoong Liaoning R&D Institute in China
- Launched NABOTA

2013
- Acquired Liaoning Baifeng, Chinese drug manufacturer
- Hyangnam Plant Expansion

2011
- Completion of Daewoong Bio
- API Manufacturing plant

2009
- Established India Research Center
- Established US Branch
- Established Beijing Research Center

2008 Established China Branch Office

1992 Established HyangnamManufacturing Plant

1983 Changed Corporate Name to Daewoong Pharmaceutical Co.Ltd

1978 Established Daewoong Chemical Co.Ltd(Now Daewoong Bio. Inc)

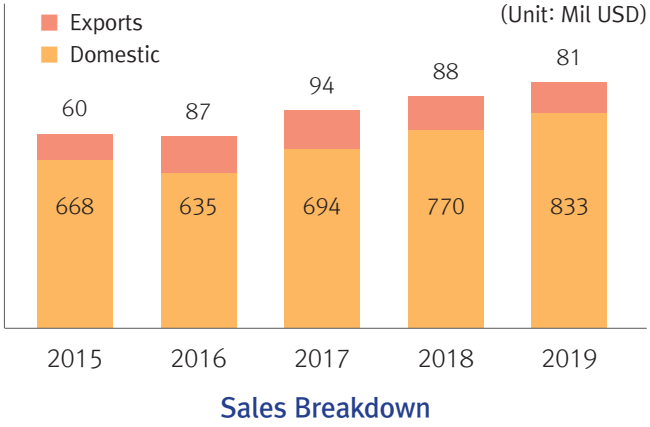
1945 Established as Daehan Chemical Industry Co. Ltd

DAEWOONG PHARMACEUTICAL CO.,LTD.

2019 Summary of Financials

Sales increased by 6.5%

Invested 12.6% of Sales in R&D

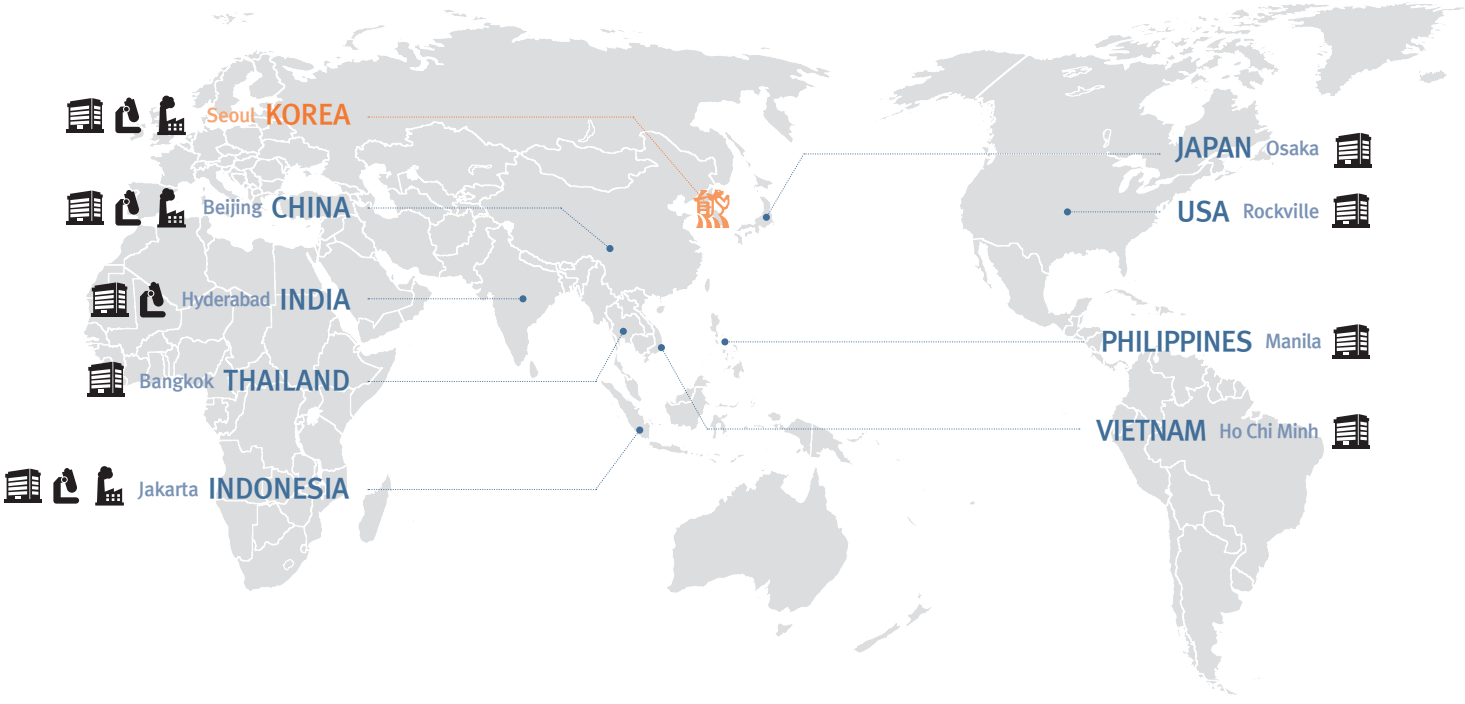


Sales Breakdown

Global Presence

○ 100+ Partners worldwide

Office
R&D Center
Manufacturing Site



Pan-Global Specialized Manufacturing Capabilities

DAEWOONG PHARMACEUTICAL CO.,LTD.

Korea

Daewoong Pharmaceutical has a number of strategically located manufacturing sites, each of which specializes in various production lines such as depot, liquid suspension, biologics, and etc.

Osong Plant Chungcheongbuk-do, South Korea

01. Highly automated mass production facility
02. Qualified injection manufacturing facility
    - Depot injection & ampoule, vial, drip infusion kit
    - First in Korea to be equipped with Dual Chamber Syringe (DCS) charging line)
03. Capacity: Dual Chamber Syringe (0.35M), Prefilled Syringe (0.25M), Tablet (2B)

Area: 40,892 m^2 (440,158 ft^2)
Manufacturing Products: Oral Solid, Depot Injection, Vial, Ampoule

Hyangnam Plant Hyangnam, South Korea

01. Main manufacturing site for oral solids, suspensions, injectables and biologics
02. Produces Korea's first new biomedicine 'EGF'(Epidermal Growth Factor)
03. Supports clinical trial(phase 1-3) batch sizes and clinical scale-up manufacturing
04. Capacity: Tablet (1B), Prefilled Syringe (1M)

Area: 31,735 m^2 (341,598 ft^2)
Manufacturing Products: Oral Solid, Microbial Product, Cell cultured Product

Seongnam Plant Seongnam, South Korea

01. Top cephalosporin CMO facility
02. RABS (Restricted-access barrier system) ensures sterility and validated aseptic-quality products
03. Capacity: Powder Injection Filling Line (24M Vial), Tablet (100M), Capsule (100M)

Area: 7,535 m^2 (81,106 ft^2)
Manufacturing Products: Cephalosporin Injection, Tablet, Capsule

Anseong Daewoong-Bio Plant
Anseong, South Korea

Area
8,180 m^2 (88,048 ft^2)

Manufacturing Products
Oral Solid

Daejeon Plant (HANALL BIOPHARMA)
Daejeon, South Korea

Area
9,011 m^2 (96,993 ft^2)

Manufacturing Products
A/A infusion, Oral Solid

Pan-Global Specialized Manufacturing Capabilities

DAEWOONG PHARMACEUTICAL CO.,LTD.

Global

Maximizing our accumulated knowhow, we have acquired or built plants in strategic geographical locations that better enable us to address the local markets' needs.

Surabaya Plant Surabaya, Indonesia

01. Dedicated for Biological products (EPO, EGF, Somatropin)
02. Independent production lines preventing cross-contamination
03. HALAL certified process management from drug substance to finished products
04. Capacity: Prefilled Syringe (4M)

Area: 2,484 m^2 (26,737 ft^2)
Manufacturing Products: Biopharmaceutical Products (EPO, EGF, hGH, BMP)

Liaoning Plant Liaoning, China

01. Closed system throughout the production process
02. BIN System based transfer and handling
03. Unmanned ingredient transfer using line and pump
04. Capacity: Oral Liquid (200M pouch, 30M bottle)

Area: 9,586 m^2 (103,182 ft^2)
Manufacturing Products: Liquid for oral administration

Sichuan Plant Sichuan, China

01. Top gall bladder-related production technology
02. UDCA intermediate production
03. API & CDCA (Chenodeoxycholic acid)

Area: 10,000 m^2 (107,639 ft^2)
Manufacturing Products: Chenodeoxycholic acid, crude Cholic acid

Total Capacity per Year

Type	Quantity	Type	Quantity	Type	Quantity
Tablet	6.7 Billion	Bottle	102 Million	Bag	0.5 Million
Capsule	205 Million	Pouch	130 Million	Ampoule	0.1 Billion
Vial	70 Million	Syringe	5.6 Million	Kit	7 Million

Global R&D Centers

DAEWOONG PHARMACEUTICAL CO.,LTD.

Daewoong's R&D Centers strive to develop innovative drugs through the utilization of internal resources and open collaboration on ideas and technologies from external resources

Daewoong Bio Center Yongin, South Korea, Oct. 2016

01. Recombinant products including therapeutic antibodies
   - Bio-betters using long-acting technology, Growth factors

02. Stem cell research for enhancement of efficacy
   - Innovative stem cell line establishment
   - Discovery of new indications

Jakarta Research Center Indonesia, Dec 2016

01. Development of biotechnology-driven products
   - EPO, EGF, hGH
   - Extensions of indication through clinical studies

02. Focus on reverse innovation and open collaboration (ex. Univ. of Indonesia)

Life Science Research Institute Yongin, South Korea

01. New Chemical Entity (NCE)
   - Therapeutic areas: Autoimmune diseases, Metabolic diseases
   - In-vitro/in-vivo evaluation for autoimmune drugs

02. Incrementally Modified Drugs
   - Sustained-release technologies including Depot
   - Differentiated fixed-dose combination technology

Liaoning Research Center China, Oct 2014

01. Development of generics for China market entry

02. Formulation R&D
   - New oral solutions, Suspension products, Sustained-release drugs

03. Academic collaboration (ex. Shenyang Pharmaceutical Univ.)

Hyderabad Research Center India, Jan 2009

01. Development of first generics

02. Development of global generics for EU/US market entry
   - Sustained-release drugs, Formulation change

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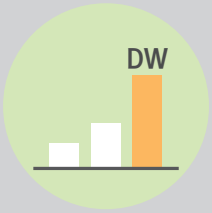
Strategic Approach to R&D

Daewoong's R&D Strategy is to focus and invest resources to develop First-in-Class or Best-in-Class therapies to better serve unmet medical needs.

First-in-Class



Best-in-Class

Areas of Focus

Core Competencies

Gastric/Metabolic Diseases

- GERD
- Diabetes
- Osteoporosis
- Ulcerative colitis

Target High Growth Potential Markets

Inflammatory/ Immune Diseases / Pain

- Fibrosis
- Dry Eye Syndrome
- Auto-immune Disease

Anti-cancer

- Hormone based Cancer
- Ab-based Immunotherapy
- Supportive Care of Cancer

Forefront of Innovation

Stem Cell Therapy

- Degenerative &
- Orphan/Rare Disease

New Chemical Entity

Project	MoA	Best in Class First in Class	Description	Status
Fexuprazan	P-CAB	BIC	GERD	
Enavogliflozin	SGLT2 inhibitor	BIC	Diabetes	
DWP305401	Pellino-1 inhibitor	FIC	Ulcerative Colitis (UC)	
DWN12088	PRS Inhibitor	FIC	Idiopathic Pulmonary Fibrosis (IPF)	
DWP17061	Nav1.7 blocker	FIC	Osteoarthritis Pain	
DWP213388	ITK/BIK inhibitor	FIC	Autoimmune disease (cGVHD, RA)	
DWP212525	JAK3/TFK inhibitor	FIC	Autoimmune disease (PV, RA)	

Biologics

DWP457	Long acting insulin	Diabetes	
DWP458	Undisclosed Protein	Osteoporosis	
DWSR-001	Stem Cell	Alzheimer's disease, Stroke, Osteoarthritis, Severe acute pancreatitis, Idiopathic pulmonary fibrosis	

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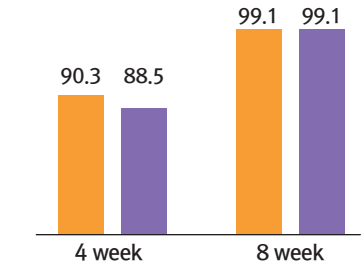
Fexuprazan

MOA: Potassium-Competitive Acid Blocker (P-CAB)

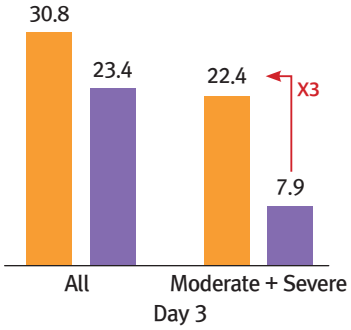
Indication: Erosive Esophagitis(EE), maintenance of EE, risk reduction of NSAIDs associated ulcer etc.

- Fexuprazan is the Best-in-Class novel anti acid secretion agent with rapid onset time and potent acid suppressive effect, addressing the growing unmet needs of PPIs.
- From the phase 3 study in Erosive Esophagitis patients, Fexuprazan was efficacious and safe up to 8weeks.

[Phase III Results in Korea (EE)]



Healing rate(%)
at Week 4 and Week 8 (Based on endoscopy)



Symptom relief for heartburn
(Fast onset)

Fexuprazan 40mg Esomeprazole 40mg

Proportion of subject without symptom (HB)

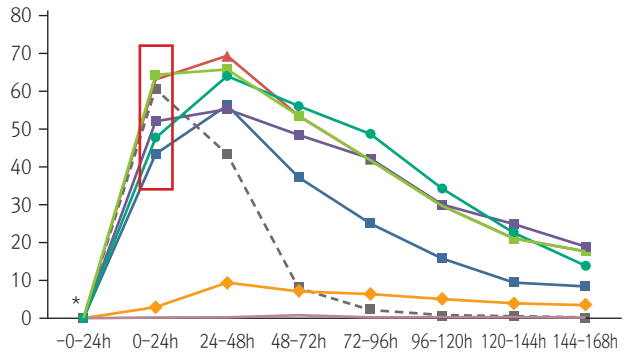
Enavogliflozin

MOA: Sodium Glucose Co-Transporter 2 (SGLT2) Inhibitor

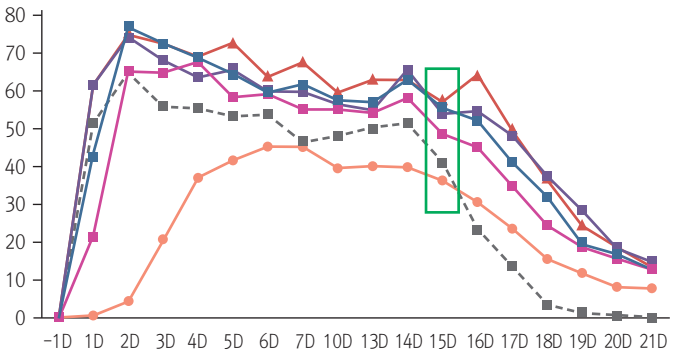
Indication: Type 2 diabetes

- DWP16001 demonstrated long lasting (over 3 days) and high potent urinary glucose excretion effect in human, excellent safety and tolerability and favorable pharmacokinetic profiles.

[Urine Glucose Excretion, g/day]



SAD (Single Ascending Dose) : Pharmacodynamics



MAD (Multiple Ascending Dose) : Pharmacodynamics

DWP 16001 0.2mg
DWP 16001 0.5mg
DWP 16001 1mg
DWP 16001 2mg (Fasting)
DWP 16001 2mg (Fed)
DWP 16001 5mg
Dapagliflozin 10mg
Placebo

DWP 16001 0.1mg
DWP 16001 0.3mg
DWP 16001 0.5mg
DWP 16001 1mg (Fasting)
DWP 16001 2mg (Fed)
Dapagliflozin 10mg

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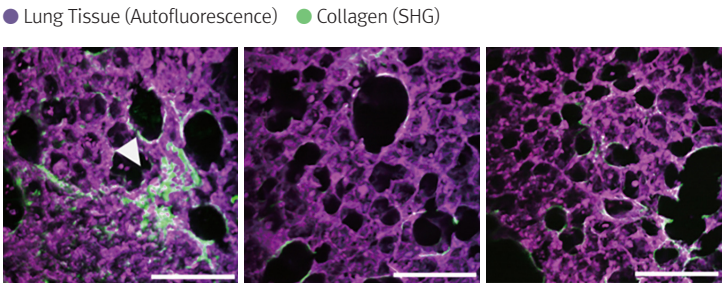
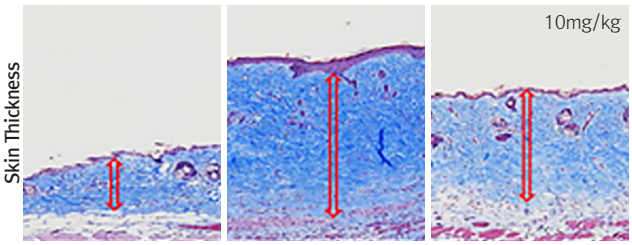
DWN12088

MOA: Prolyl-tRNA Synthetase Inhibitor
Indication: Idiopathic Pulmonary Fibrosis, Systemic Sclerosis, Cardiac Fibrosis, NASH, etc.
- Novel Target: First-in-Class PRS Inhibitor
- Efficacy: Superior anti-fibrotic effects in mouse pulmonary fibrosis model
- Safety: Confirmed wider safety margin compared to current Standard of Care (Esbriet®, Ofev®)

[Mouse Pulmonary Fibrosis Model]

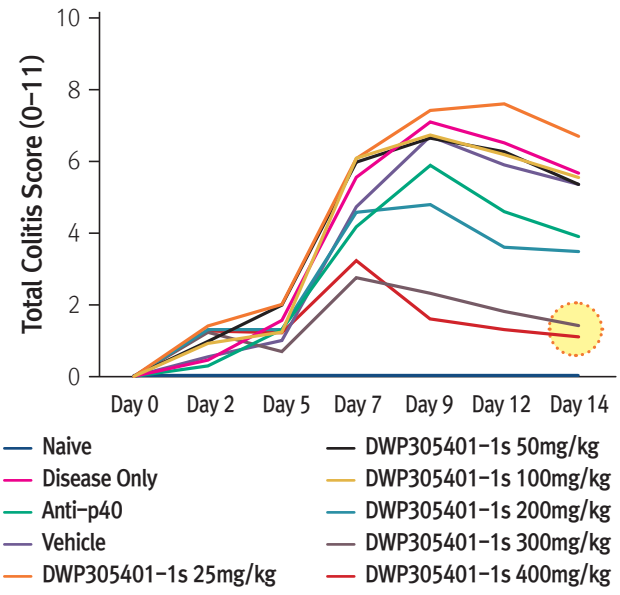


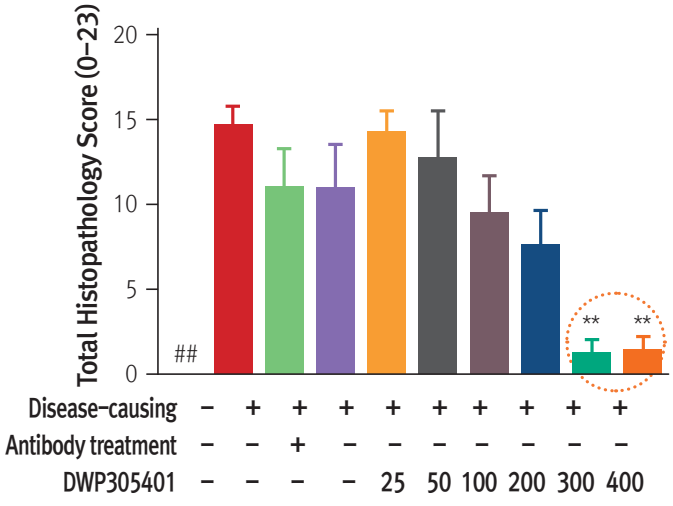
[Mouse Skin Fibrosis model]



DWP305401

MOA: DWP305401 is a novel inhibitor of Pellino-1. DWP305401 can inhibit NF-κB-mediated infl ammatory signals stimulated by MyD88 and RIP1 complexes.
Indication: Ulcerative Colitis (UC)
- DWP305401 is a First in Class oral Pellino-1 inhibitor to treat Ulcerative Colitis
- DWP305401 was shown to be safe and well tolerated, with no systemic exposure in healthy subjects in US Phase I trial.
- Obtained development and commercial right for Asian market from Bridge Biotherapeutics
- 1st interim efficacy readout from Phase II (first in patient) trials is available in March 2020.
- Phase I in China IND was cleared in Dec. 2019. Expect to activate site in 2Q 2020 but subject to COVID-19.





NABOTA™ 50, 100, 200Units / Vial-Inj.

- Botulinum toxin type A
- Indication: Glabellar Lines (Approved in KR, US, EU, Canada), Post Stroke Upper Limb Spasticity (Approved in KR), Crow's feet (Approved in KR), Blepharospasm (Approved in KR)

- The only 900kDa neurotoxin approved in US and EU after Botox™
- It has proven efficacy & safety from the large-scale global clinical studies with more than 2,000 subjects in the US and Europe for the first time by Asian botulinum toxin.
- It is produced with a patented technology for purity, minimizing the presence of impurities (HI-pure™ Technology)

* Prabotulinumtoxin A : Registered as NABOTA™ in Korea and Asia, JEUVEAU™ in the US, and NUCEIVA™ in Canada and EU

Epodion™ 2000, 3000, 4000, 10000IU / Pre-filled syringe Inj.

- rhEPO (recombinant human erythropoietin)
- Indication: Anemia in chronic renal failure

Epodion™ is PFS type of Erytrhopoietin - alpha (rhEPO) for improving the hemoglobin and hematocrit level in chronic kidney disease patients.

DWP 710 Injection of cryopreserved cell

- Mesenchymal stem cell
- Indication:
  - Coronavirus Disease (COVID-19)
  - Suppression of cytokine storm caused by overactive immune response
  - Acute respiratory distress Syndrome due to lung damages
- MoA: MSC releases anti-inflammatory factors to control inflammatory response

Immuno-modulation	Efficacy study on ARDS animal model	Cryo-perservative
Superior Factors · IGF-2: Stem cell functional improvement · IL-6: Angiogenesis and Immune response	Improved Survival ratio at LPS-induced animal model · Control Survival ratio: 28.6% · DW-MSC survival ratio: 75%	· Freeze-storage products can be stored in hospitals · Can be used directly in the hospital in the event of a patient's illness
Cell banking system	**No Donor variation**	**MoA**
Cell banking system: mass-produced and supplied with consistent products	Advantages compare with other adult-derived MSC 1 Donor; Product consistancy	Confirms immunomodulatory ability to directly inhibit Cytokine storms

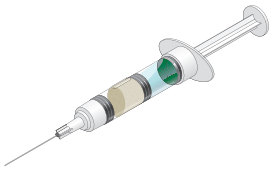
DAEWOONG PHARMACEUTICAL CO.,LTD.

Luphere™ Depot 3.75mg-Inj.

- Leuprorelin Acetate
- Indication: Prostate cancer, Endometriosis, Pre-menopausal breast cancer, Uterine leiomyomata (Fibroids), Central Precocious Puberty

Luphere has two formulations; Daewoong's proprietary patented spray-drying formulation and the emulsion formulation which will make it one of few bio-equivalent generics in the market.

Aripiprazole™



- Aripiprazole Monohydrate
- Indication: Treatment of Schizophrenia and Bipolar I Disorder

Daewoong has been developing AB rated generic product for US market and has its own patented DCS device which is one of two dosage forms of Aripiprazole LAI and only few companies have the capability.

Niclosamide IM Depot Injection

- Formulation: IM, Single Injectable
- Indication:
  - Coronavirus Disease (COVID-19)
  - Pulmonary arterial hypertension (PAH)
  - Idiopathic Pulmonary Fibrosis (IPF)
- MoA: SKP2 Inhibitor, STAT3 & TMEM16A Inhibitor

Highest Antiviral Potency	Extensive Activity Regardless of Tolerance	Optimal PK Profiles for Infection
• 40 times vs. Remdesivir • 26 times vs. Chloroquine • 15 times vs. Ciclesonide	Dual MoA effective in suppressing lung damage	**New Drug Reformulation:** effective delivery with single dosage lasting for 2-weeks
Improve Various Complications	**No safety concerns expected**	**Benefits of New Formulation**
Inflammatory cell infiltration in lung tissue ↓ CV risk in severe patients ↓	No systemic AE predicted 50 years ↑ use experience No increase in systemic exposure compared to PO	Overcomes the draw backs of Oral formulation i.e., Gastrointestinal disorder and Low absorption

DAEWOONG PHARMACEUTICAL CO.,LTD.

Olostar™ 20/10mg and 40/20mg – Tab.

- Olmesartan medoxomil, Rosuvastatin
- Indication: Concomitant Hypertension and Dyslipidemia

World's 1st fixed dose combination of olmesartan and rosuvastatin
1. Developed with Daewoong's patented formulation technology
2. Indicated for the treatment of both hypertension and dyslipidemia
3. Combination of the most potent ARB and statin in their respective classes
4. Minimized drug to drug interaction in metabolism and absorption

URSA™ 25, 50, 100, 200, 250, 300mg – Tab., Soft Cap., Hard Cap.

- UDCA (Ursodeoxycholic Acid)
- Indication: Cholestasis(include PBC, PSC), Viral hepatitis C, Gallstone

URSA improves liver function in chronic hepatitis patients, improves symptom and histopathology in Cholestatis patients, and UDCA is the only drug approved for PBC by the US FDA.

Foistar™

- Camostat Mesilate
- Indication:
  - SARS-CoV-2 infection (COVID19)
  - Acute symptoms of chronic pancreatitis
  - Postoperative reflux esophagitis
- MoA: TMPRSS-2 inhibitor

Antiviral Effect	Fast-Development (Drug repositioning)
• TMPRSS2 inhibitor • Suppressing viral infection • A broad-spectrum anti-viral agent	• A commercially available drug with proven safety (marketed since 2012) • Emergency use after CT Phase 2 • Numerous clinical & development experience
Oral Drug	**Stable Supply**
• Easy to Take Unlike Nafamostat (intravenously) • Patient compliance ↑ • Low DDI • Low manufacturing cost	• Mass production of high-quality product • Reliable distribution & supply

Products Available for Discussion

DAEWOONG PHARMACEUTICAL CO.,LTD.

Classification		Brand Name	Active Ingredient	Strength	Dosage Form
Biologics	Central Nervous System	NABOTA	Botulinum Toxin Type A	50, 100, 200Units	Inj.
	Endocrinology	CareTropin	Somatropin	22.5IU	Cartridge Inj.
	Musculoskeletal	Novosis	rhBMP-2	0.25mg, 1mg, 3mg	Lyophilized Powder
	Nephrology	Eposis	rhEPO	2000IU, 3000IU , 4000IU, 5000IU, 6000IU, 8000IU, 10000IU	Prefilled Syringe Inj.
	Wound	Easyef Solution	rhEGF	5mg/10ml	Topical Solution
	Wound	Easyef Ointment	rhEGF	1ug/g	Ointment
Chemical	Antineoplastics	Luphere Depot	Leuprorelin acetate	3.75mg	Vial
	Cardiovascular	Olostar	Olmesartan medoxomil/ Rosuvastatin	20mg/10mg, 40mg/20mg	Tab.
	Cardiovascular	Olomax	Olmesartan medoxomil/ Amlodipine/Rosuvastatin	40/10/20mg, 40/10/10mg, 40/5/10mg, 20/5/10mg	Tab.
	Cardiovascular	DW Pitavastatin	Pitavastatin calcium	2mg	Tab.
	Cardiovascular	Crezet	Ezetimibe / Rosuvastatin	10mg/5mg, 10mg/10mg, 10mg/20mg	Tab.
	Gastrointestinal	URSA	Ursodeoxycholic acid	100mg, 200mg, 250mg, 300mg	Tab.
	Gastrointestinal	URSA	Ursodeoxycholic acid	250mg	Cap.
	Gastrointestinal	URSA	Ursodeoxycholic acid	100mg	Soft Cap.
	Metabolic	Risenplus	Risedronate Sodium	35 mg	Tab.
	Antiviral	Tamivict	Oseltamivir Phosphate	30mg, 45mg, 75mg	Cap.
OTC	Analgesic	EZN 6 Pro	Dexibuprofen	300mg	Soft Cap.
	Antacid	Newlanta	Al_2O_3 / $Mg(OH)_2$	200mg/400mg	Suspension
	Digestive	Bearse	Multi-enzymes (incl.Biodiastase 2000 III, Lipase I, Ursodeoxycholic Acid)	-	Tab.
	Iron Supplement	Hemo Q Plus	Polysaccharide iron complex/ Cyanocobalamin 0.1%/Folic acid	326mg/25mg/1mg	Cap.
	Muti-Vitamin	Impactamin Power	Vitamin B Complex (incl. Benfotiamin)	-	Tab.

Products Available for Discussion

DAEWOONG PHARMACEUTICAL CO.,LTD.

Classification		Status	Active Ingredient	Strength	Dosage Form
Under dvelopment	Gastrointestinal	Phase III	Fexuprazan HCl	40mg	Tab.
	Endocrine	Phase III	Enavogliflozin	0.3mg	Tab.
	Gastrointestinal	Phase II	DWP305401	-	Cap.
	Obesity	Phase III	Deoxycholic Acid	10mg/mL	Vial
	Antiviral	Formulation	Tenofovir Alafenamide Fumarate	25mg	Tab.
	Antineoplastics	Formulation	Leuprorelin acetate	-	DCS
	Central Nervous System	Pre-clinical	Aripiprazole Monohydrate	300mg, 400mg	Vial / Inj.
	COVID-19	Phase II Phase III	Camostat	100mg	Tab.
	COVID-19	Phase I	Niclosamide	-	Vial (Long acting Inj)
	COVID-19 (Human Stem cell)	Phase I	DWP710	-	Vial
	Antiparkinsonian	Formulation	Zonisamide	25mg, 50mg	ODT
	NOAC (Anticoagulant)	Formulation	Rivaroxaban	10mg, 15mg	ODT

Classification		Status	Product Line	Components	Package
Devices	IVD	Marketed	COVID-19 PCR Kit	buffer, Enzyme, Control etc.	100 tests/box
	IVD	Marketed	COVID-19 IgG/IgM RDT	Kit, buffer, pipette	20EA/box
	IVD	Marketed	COVID-19 Rapid PCR Kit	buffer, Enzyme, Control, 8 cap strip & 96 well plates	100 tests/box
	IVD	Marketed	COVID-19 Antigen RDT	Test device, buffer, filter cap, nasal swab	25 tests/box
	Medical Device	Marketed	UTM/VTM : Viral transport medium	Transport medium+2 swabs (Nasopharyngeal, Oropharyngeal)	50EA/box

Meet Our Team Members

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