UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of
The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): January 27, 2021

CORBUS PHARMACEUTICALS HOLDINGS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**001-37348**	**46-4348039**
(State or other jurisdiction of incorporation)	*(Commission File Number)*	*(IRS Employer Identification No.)*

500 River Ridge Drive, Norwood, MA	**02062**
(Address of principal executive offices)	*(Zip Code)*

Registrant's telephone number, including area code: **(617) 963-0100**

Not Applicable
(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, par value $0.0001 per share	CRBP	Nasdaq Global Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1 933 (17 CFR §230.405) or Rule 12b-2 of the Securities Exchange Act of 1934 (17 CFR §240.12b-2).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 8.01. Other Events.

Corbus Pharmaceuticals Holdings, Inc. is using the slides attached hereto as Exhibit 99.1 to this Current Report on Form 8-K in connection with management presentations to describe its business.

Item 9.01. Financial Statements and Exhibits.

(d) The following exhibit is furnished with this report:

Exhibit No.	Description
99.1	Investor Presentation
104	Cover Page Interactive Data File (embedded within the Inline XBRL document).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto

duly authorized.

CORBUS PHARMACEUTICALS HOLDINGS, INC.

Dated: January 27, 2021

By: */s/ Yuval Cohen*
Name: Yuval Cohen
Title: Chief Executive Officer

Exhibit 99.1

CORBUS PHARMACEUTICALS

Targeting CB1 and CB2 for Human Therapeutics

NYAS Targeting the Endocannabinoid System for Treatment of Human Diseases

Barbara White, MD
Chief Medical Officer and Head of Research
27 JAN 2021

@corbuspharma

NASDAQ: CRBP
www.corbuspharma.com

Barbara White Disclosures

- Corbus Pharmaceuticals, Inc. – employee, stock owner
- Will discuss investigational agents that are not approved for human therapeutic use in any disease by any regulatory agency

---

CB1 Agonists

Some approved therapeutic uses of CB1 agonists and cannabidiol

Dronabinol (synthetic THC)

Nabilone (synthetic THC-like)

Supportive Care

- Anorexia, weight loss (HIV/AIDS)
- Nausea and vomiting from chemotherapy

Nervous System Diseases

- Muscle spasticity from multiple sclerosis
- Rare childhood epilepsy (Lennox-Gastaut syndrome or Dravet syndrome)

Genetic Diseases

- Tuberous sclerosis complex

Nambiximols (plant-based THC/CBD)

Cannabidiol (plant-based)

CB1 Antagonists/ Inverse Agonists

Some reported potential therapeutic uses of CB1 antagonists/inverse agonists

Rimonabant (CB1 inverse agonist, withdrawn 2008)

Metabolic diseases

- Weight-loss (previous approval)
- Diabetes[1]
- Diabetic nephropathy[1]
- Diabetic retinopathy[2]
- Metabolic syndrome[3]
- NASH[4]

Fibrotic diseases

- Lung fibrosis[5]
- Cardiac fibrosis[6]
- Renal fibrosis[7]
- Liver fibrosis[8]

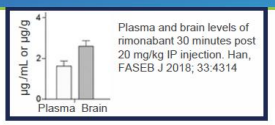
Other diseases

- Ascites[9]
- Cognitive defects[10]
- Prader-Willi syndrome[11]
- Smoking cessation[12]
- Alcohol dependence[13]

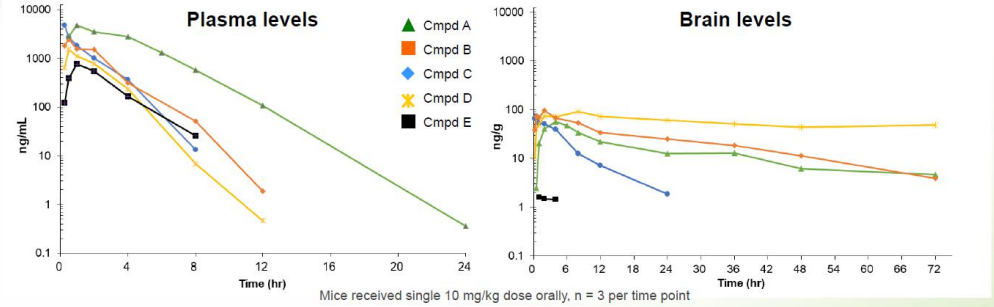
[1] Nam, Endocrinology 2012:153:1387; [2] El-Remessy, Diabetologia 2011;54:1567; [3] Hirsh and Tam, Toxins (Basel) 2019;11:275; [4] Chen, Immun Inflamm Dis 2020;8:544; [5] Cinar, JCI Insight 2017;20:e92281; [6] Lin, J Biol Chem 2003;85:249; [67]Dao J Cell Mol Med 2019;23:7279; [8] Kunos, J Med Chem 2017, 60:1126; [9] Domencicali, Gastroenterology 2009; 137:341; [10] Navarro-Romero, Neurobiol Dis 2019;125:92; [11] Knani, Mol Meta 2016;5:1187; [12] Robinson Addiction Biology 2018;23:291; [13] George, Psychopharmacology 2010' 208:37;

Novel Corbus CB1 inverse agonists with limited blood-brain barrier penetration

- Inhibit CB1 which regulates metabolism, inflammation, and fibrosis
- **Must limit brain exposure** because of on-target AEs of anxiety and suicidality



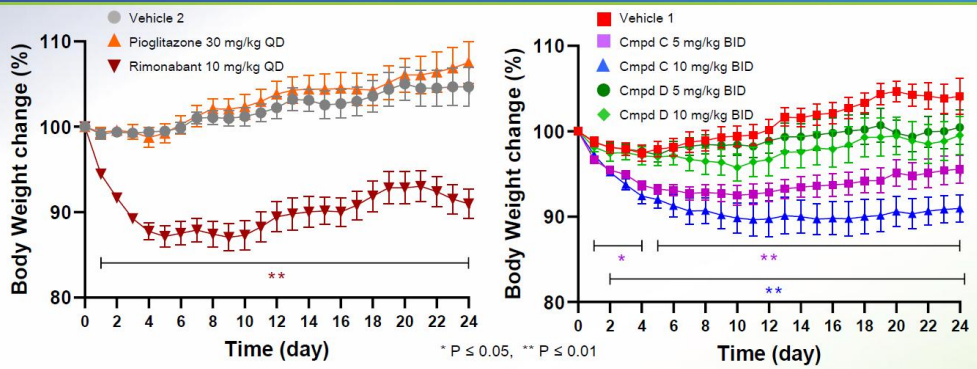
Plasma and brain levels of rimonabant 30 minutes post 20 mg/kg IP injection. Han, FASEB J 2018; 33:4314



Mice received single 10 mg/kg dose orally, n = 3 per time point

Some novel CB1 inverse agonists have low brain:plasma ratios

Corbus CB1 inverse agonists are active in diet-induced obesity model

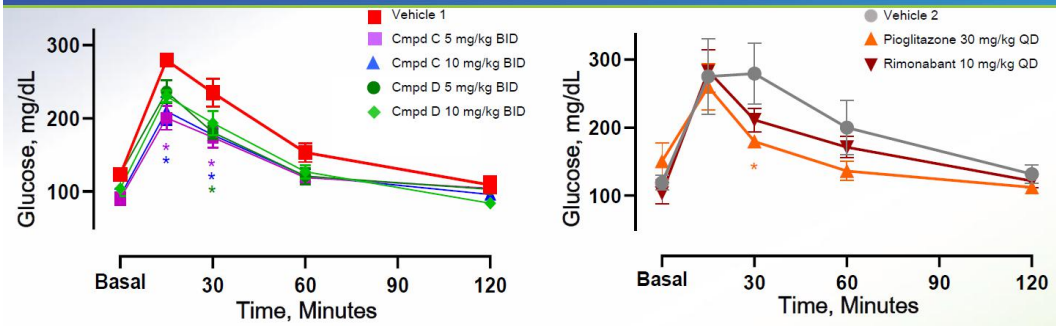


* P ≤ 0.05, ** P ≤ 0.01

Mice received a high fat diet for 28 days to induce obesity and glucose intolerance, then continued to receive high fat diet plus received oral compounds for 21 days, n = 3 per time point. Day 0 = start of investigational compounds. Note that 1 hour after last dose, the brain: plasma ratio for Cmpd C was 0.04 (5 mg/kg) and 0.022 (10 mg/kg) and for Cmpd D was 0.04 for both doses. Overall Cmpd D gave exposures that were ~7-12 fold lower than exposures for the same dose of Cmpd D.

CB1 inverse agonists preferentially limited to peripheral tissues have weight loss activity

Corbus CB1 inverse agonists improve glucose tolerance



* P ≤ 0.05 vs Vehicle 1, ** P ≤ 0.01 vs Vehicle 1, ## P ≤ 0.01 vs Vehicle 2

Mice received a high fat diet for 28 days to induce obesity and glucose intolerance, then continued to receive high fat diet plus received oral compounds for 21 days. Oral glucose challenge was done on Day 21, N = 3 per time point

CB1 inverse agonists preferentially limited to the periphery improve glucose tolerance

CB2 Agonists

Some reported potential therapeutic uses of CB2 agonists

Autoimmune Diseases

- Systemic sclerosis[1]
- Dermatomyositis[2]
- Rheumatoid arthritis
- Inflammatory bowel disease
- Idiopathic thrombocytopenia purpura

Fibrotic Diseases

- Skin fibrosis
- Lung fibrosis
- Liver fibrosis
- Renal fibrosis
- Heart fibrosis
- Myocardial infarction

Cancer

- Anti-tumor activity
- Anti-metastasis
- Chemo-induced cardiomyopathy
- Chemo-induced ototoxicity

CNS Diseases

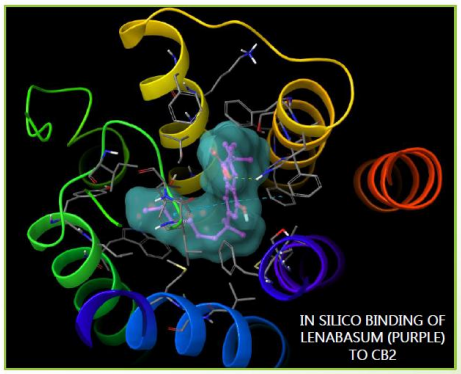
- ALS
- Multiple sclerosis
- Alzheimer's disease

Other

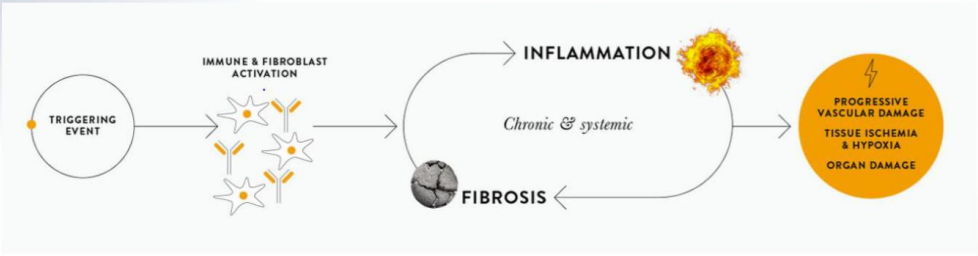
- Cystic fibrosis
- Atopic dermatitis
- Interstitial cystitis
- Acute pancreatitis, chronic pancreatitis
- Ischemic reperfusion injury
- Traumatic brain injury
- Acute lung injury
- Osteoporosis

CB2 agonists may provide therapeutic options to immunosuppressive treatments for chronic inflammatory and fibrotic diseases

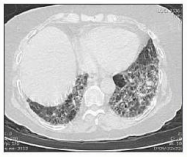
- CB2 are expressed on activated immune cells and fibroblasts
- CB2 agonists reduce production of pro-inflammatory mediators and activate resolution of inflammation
- CB2 agonists reduce production of pro-fibrotic growth factors, myofibroblast transformation, and collagen production
- Lenabasum is a synthetic, selective CB2 agonist



Systemic sclerosis is a rare, debilitating and life-threatening autoimmune disease characterized by inflammation & fibrosis



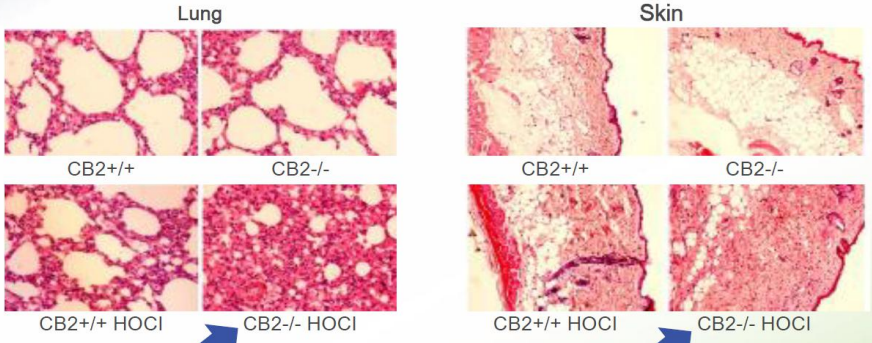




Patient images provided by the Scleroderma Foundation

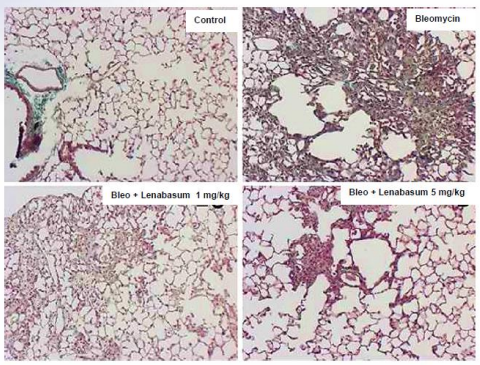
CB2 knock-out mice develop systemic sclerosis-like disease

CB2-/- mice exposed to hypochlorite, which generates oxygen radicals, fail to resolve innate immune response with persistent inflammation, autoimmunity (anti-DNA topoisomerase I antibodies), increased fibroblast proliferation, and excessive skin and lung fibrosis[1]



[1] Servettaz et al. Am J Pathol 2010;177:187-96

Lenabasum, a CB2 agonist, reduced fibrosis in an animal model of systemic sclerosis lung disease



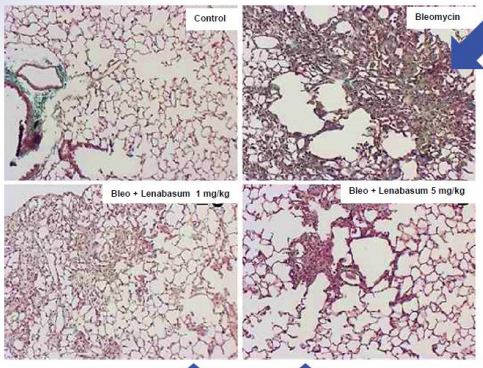
Lenabasum inhibited lung fibrosis

Lung fibrosis induced with bleomycin

- Lung fibrosis is induced with bleomycin
- Lenabasum, whether started prophylactically before bleomycin or therapeutically 1 week after bleomycin, reduced lung inflammation and fibrosis
- Lung histology is shown for Day 14 post-bleomycin, when lenabasum was starting therapeutically at Day 8

Lucatelli, Respir Res. 2016;17:49

Lenabasum, a CB2 agonist, reduced fibrosis in an animal model of SSc lung disease



Lenabasum inhibits lung fibrosis

Lung fibrosis induced with bleomycin

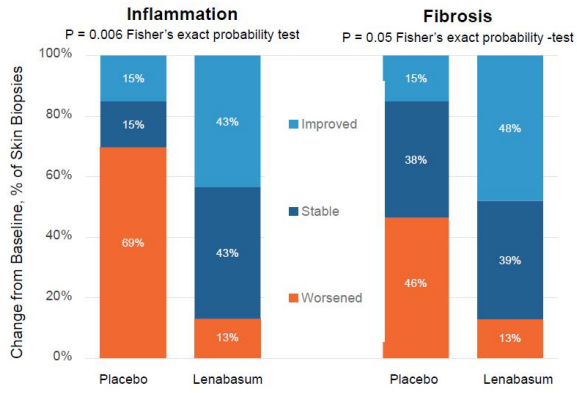
- Lung fibrosis is induced with bleomycin (bleomycin versus control)
- Lenabasum, whether started prophylactically before bleomycin or therapeutically 1 week after bleomycin, reduced lung inflammation and fibrosis
- Lung histology is shown for Day 14 post-bleomycin, when lenabasum was starting therapeutically at Day 8

Lucatelli, Respir Res. 2016;17:49

SSc Phase 2

Lenabasum, a CB2 agonist, improved inflammation and fibrosis in skin biopsies from SSc patients in a Phase 2 study

- More improvement or stability of histological findings of inflammation and fibrosis in paired skin biopsies after 12 weeks treatment with lenabasum versus placebo



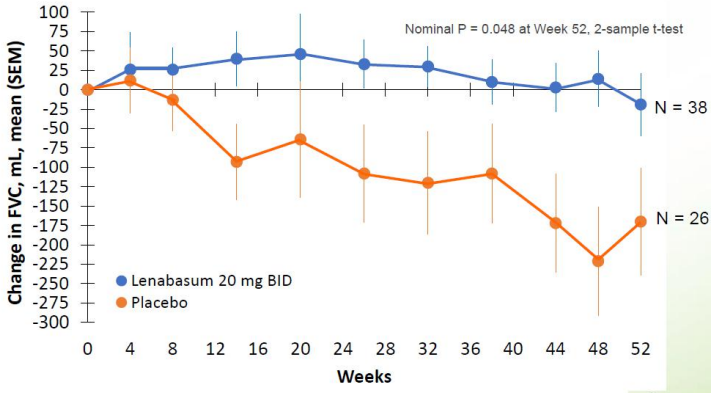
Analyses are of paired skin biopsies at baseline and Week 12, N = 23 lenabasum and N = 13 placebo.

Note: Primary efficacy endpoint in Phase 2 study was met

RESOLVE-1 Phase 3

Systemic sclerosis subjects treated with lenabasum 20 mg BID added to immunosuppressants > 2 years duration had stable lung function

- RESOLVE-1 Phase 3 study
- Primary efficacy endpoint (ACR CRISS score) was not met
- Post-hoc analysis: Subjects treated with lenabasum 20 mg BID added to established immunosuppressive therapies had stable FVC, mL over 1 year



IST = immunosuppressant therapies. Post-hoc analyses, per protocol population of subjects who completed study drug and Week 52, LOCF for any missing values. Subjects were receiving at least 1 background IST for greater than 2 years treatment duration at baseline, and any mycophenolate treatment must be > 2 years duration

---

RESOLVE-1 Phase 3

Acceptable lenabasum safety profile in Phase 3 RESOLVE-1 study

- Lenabasum's safety profile was favorable, with numerically lower percentage of subjects with serious and severe AEs in lenabasum groups compared to placebo
- Lenabasum was well-tolerated with no probably- or definitely-related adverse event leading to study drug discontinuation

Treatment-emergent Adverse Events (TEAE)	Placebo N = 123, n (%)	Lenabasum 5 mg N = 120, n (%)	Lenabasum 20 mg N = 120, n (%)
Any TEAE	106 (86.2)	110 (90.2)	110 (91.7)
Any Serious TEAE	18 (14.6)	10 (8.2)	11 (9.2)
Any TEAE by Maximum Severity			
Mild	44 (35.8)	47 (38.5)	55 (45.8)
Moderate	46 (37.4)	59 (48.4)	48 (40.0)
Severe	16 (13.0)	4 (3.3)	7 (5.8)
Any TEAE by Strongest Relationship			
Unrelated	41 (33.3)	35 (28.7)	36 (30.0)
Unlikely	30 (24.4)	34 (27.9)	27 (22.5)
Possible	33 (26.8)	36 (29.5)	42 (35.0)
Probable	2 (1.6)	5 (4.1)	4 (3.3)
Definite	0	0	1 (0.8)
Any TEAE Leading to Study Drug Discontinuation	7 (5.7)	2 (1.6)	5 (4.2)
Potentially Related TEAEs Leading to Study Drug Discontinuation	1 (0.8)	0	0
Any TEAE Leading to Death	1 (0.8)	0	1 (0.8)

Safety population of 365 subjects receiving at least 1 dose of study drug. Deaths during active treatment were unrelated to study drug. Death in the placebo group was from rapidly progressing SSc with respiratory and renal failure. Death in the lenabasum 20 mg group was from myocarditis leading to heart and respiratory failure.

CF Phase 2b

Lenabasum reduced PEx rates in post-hoc analyses in subjects with similar baseline lung functio (FEV1 40-<90% predicted) and CFTR-modulator use

- Phase 2b study in subjects with CF and high risk of pulmonary exacerbations (PEx)
- Primary efficacy endpoint (rate of PEx per subject per 28 Weeks) was not met
- Post-hoc subset analysis was done of subjects with similar baseline FEV1 and use of CFTR modulators, excluding 5 Eastern European countries with unusually low PEx rates
- Numerically lower PEx rate in lenabasum versus placebo cohorts for multiple comparisons, especially in lenabasum 5 mg BID group

			PEx rate per Subject per 28 Weeks (relative reduction vs PBO)			
			Primary PEX definition	Primary PEX definition	Secondary PEX definition	Secondary PEX definition
Treatment	N	CFTR Modu-lators		IV ABx		IV ABx
FEV1 % predicted ≥ 40 to < 90%						
Placebo	111		1.10	0.58	1.31	0.65
Lenabasum 5 mg	55		0.75 (19%)	0.51	0.96 (26%)	0.48 (16%)
Lenabasum 20 mg	104		1.02	0.50	1.23	0.60
Placebo	78		1.09	0.57	1.32	0.64
Lenabasum 5 mg	42	No	0.93 (15%)	0.55	1.03 (22%)	0.60
Lenabasum 20 mg	68		1.00	0.48 (16%)	1.22	0.57
Placebo	33		1.11	0.59	1.27	0.68
Lenabasum 5 mg	13	Yes	0.76 (31%)	0.38 (35%)	0.76 (40%)	0.38 (44%)
Lenabasum 20 mg	36		1.06	0.54	1.24	0.67

Per protocol population. Relative reduction is shown only if ≥ 15% reduction

Some potential activities of CB2 agonists in cancer

- Anti-proliferative effects[1], block cell cycle progression[2]
- Pro-apoptotic effects on tumor cells[3]
- Reduce EGF/EGFR and GF-I/IGF-IR pathways[4]
- Attenuate downstream functions of CXCR4[5] or Her2[6] , which form heterodimers with CB2
- Attenuate bone-cancer-induced pain[7]

[1] Olea-Herrero Br. J. Cancer 2009;101:940. [2] Caffarel Cancer Res 2006;66:6615. [3] Morales J Med Chem 2015;58:2256. [4] Elbaz, Oncotarget 2017:8:29668. [5] Coke, J Biol Chem 2016;291,9991. [6] Blasco-Benito Proc Natl Acad Sci USA 2019;116:3863. [7]Lozano-Ondoua Life Sci 2010; 8:646.

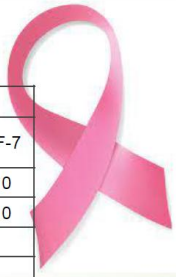
Novel Corbus CB2/CB1 agonists inhibit breast cancer cell growth

IC_{50} µM concentrations that cause 50% inhibition of breast cancer cell growth

Cmpd	Triple negative		
	MD-MB-468	MDA-MB-231	MDA-MB-436
AA	3.1	5.4	4.5
BB	3.6	8.1	10.7
CC	2.9	6.7	2.6
DD	3.6	8.4	4.0
EE	3.8	11.3	4.1
FF	6.2	11.6	9.0
GG	6.0	6.8	6.6

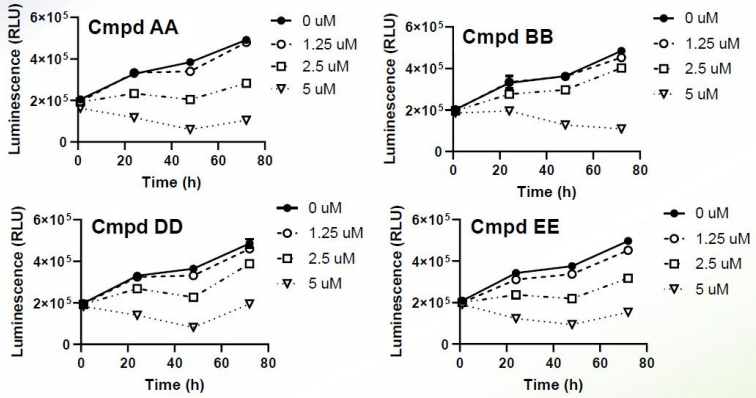
Cmpd	Her2+		
	BT-474	HCC1954	SKBR3
AA	5.1	3.5	5.2
BB	5.4	5.2	6.1
CC	7.2	7.7	11.3
DD	7.9	6.4	10.5
EE	13.5	6.1	16.2
FF	10.2	7.2	12.9
GG	10.2	6.5	11.9

Cmpd	ER+	
	T-47D	MCF-7
AA	5.4	> 10
BB	5.7	> 10
CC	11.7	
DD	10.4	
EE	8.5	> 10
FF	12.1	
GG	8.8	



The human cancer cell lines were cultured ± compounds from 0 µM to 10 or 20 µM. After 3 days, number of viable cells was determined using the CellTiter-Glo luminescence assay, and then IC_{50} concentrations were determined. Compounds were not toxic at these doses.

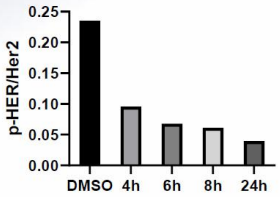
CB2 agonists provide dose-dependent and time-dependent inhibition of growth of triple negative breast cancer cell line MDA-MB-468



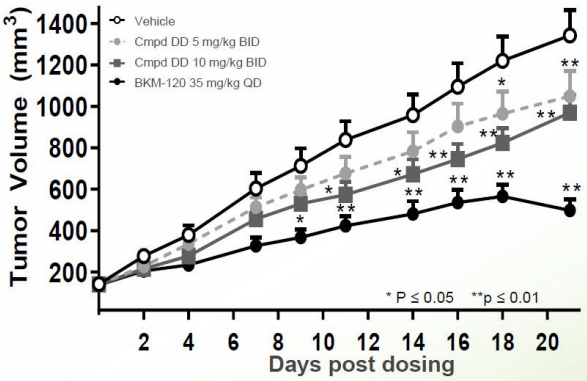
Human triple negative breast cancer cell line MDA-MD-468 was cultured ± CB2 agonists in different concentrations, for different times. Number of viable cells was determined using the CellTiter-Glo luminescence system, and luminescence is shown. Compounds were not toxic at these doses.

A CB2 agonist inhibits Her2 phosphorylation and Her2+ tumor cell growth in a xenograft model

Compound DD inhibited HER2 phosphorylation in HCC1954 breast cancer cells



HCC1954 Her2+ breast cancer cells were cultured with vehicle (DMSO) or compound DD for different times. Densitometric analysis of the relative expression of the phosphorylated Her2 vs. total Her2 protein was determined. Compound DD suppressed both HER2 (shown) and Akt phosphorylation in HCC1954 cells.



Female Balb/c mice nude mice were injected in the flank with HCC1954 Her2+ breast cancer cells. Pharmacological treatments for 21 days were started when tumors reached 90-180 mm^3 were cultured with vehicle or compound DD for different times, with compound BKM-129 serving as the positive control. Tumor size was measured using a caliper and tumor volume was calculated.

CB2 agonists also inhibit lung cancer and glioblastoma cell growth

IC_{50} µM concentrations that cause 50% inhibition of cancer cell growth

Non-small cell lung cancer cells

Cmpd	SW1573	A549	HCC827
AA	4.5	7.1	6.4
BB	8.6	9.0	7.8
CC	3.3	8.4	13.3
DD	4.6	12.6	13.0
EE	6.2	8.4	13.2
FF	10.8	14.2	10.4
GG	5.7	5.9	11.2

Glioblastoma cells

Cmpd	U251	SF216
AA	3.8	9.0
BB	5.9	14.0
CC	3.6	10.5
DD	3.5	18.5
EE	4.3	18.3
FF	7.0	14.8
GG	4.6	9.0

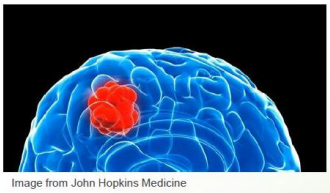


Image from John Hopkins Medicine

The human cancer cell lines were cultured ± compounds from 0 µM to 10 or 20 µM. After 3 days, number of viable cells was determined using the CellTiter-Glo luminescence assay, and then IC_{50} concentrations were determined. Compounds were not toxic at these doses.

Summary and conclusions

- CB1 agonists have already been approved for treatment of anorexia, weight loss, nausea, vomiting, muscle spasticity, rare seizures, and tuberous sclerosis
- Novel CB1 inverse agonists with low brain: plasma ratios have been identified, and some have activity in animal models of metabolic disease
- Novel CB2 agonists that inhibit growth of tumor cells have been identified, with early evidence of activity in a xenograft model

CB1 and CB2 may be involved in disease pathogenesis of multiple human diseases, providing potential targets for new therapeutics