FT-1D1010

FaSSIF-V2 (also known as SIF Media)

make simply and quickly FaSSIF-V2!

Product Description

Catalog: 1D1011, 2.5L (4.475g) 1D1012, 25L (44.75g) 1D1013, 250L (447.5g)

Name: **SIF Powder to make FaSSIF-V2**

Dissolution buffer for FaSSIF-V2
Complex of taurocholate and lecithin buffer

Storage: Room temperature (Z)

For Research Use Only

Applications:

- dissolution profiles of drugs, equilibrium solubility studies

Introduction

SIF Powder is a patented complex of taurocholate and lecithin for dissolution of drugs and other solubility studies according FaSSIF-V2 method, with many technical and commercial benefits.

SIF Powder is a patented complex of taurocholate and lecithin. It makes high quality in seconds and

What is SIF PowderFaSSIF-V2 ?

SIF Powder FaSSIF-V2 makes **FaSSIF-V2** buffer in seconds. It's a **patented complex of taurocholate and lecithin** in a 15:1 molar ratio based on Professor Jennifer Dressman's formulation (Pharm Res. 2008, 25(7), pages 1663-1676).

Conventional methods of preparing these biorelevant media are very slow, complicated and expensive. SIF Powder was invented to solve these problems. As **Professor Jennifer Dressman** says, ***"SIF Powder is the fastest way to obtain reliable results for biorelevant solubility and dissolution testing."***

Super Fast

Conventional preparation methods required you to source multiple ingredients and could take several hours to prepare even a small amount of media. With SIF Powder you can make **any volume of biorelevant media you require in seconds**. A video clip shows how fast and simple it is to use: FaSSIF made in seconds.

High Quality

SIF Powder is made from high quality taurocholate and lecithin and is manufactured in a carefully monitored production environment. The product is quality controlled and every bottle comes with a Certificate of Analysis.

Great Value

Whether your media requirements are very small (e.g. for solubility tests) or extremely large (e.g. for multiple dissolution tests), SIF Powder FaSSIF-V2 is the most cost effective way of making FaSSIF-V2. SIF Powder is even cheaper than buying taurocholate alone!

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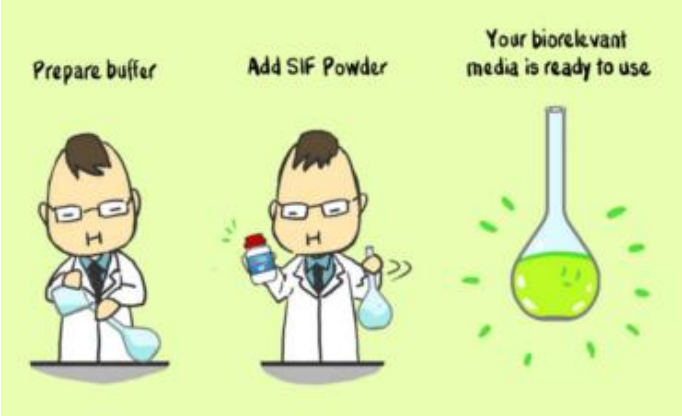
The top 12 Big Pharma companies have all bought SIF Powder Original to make FaSSIF, FeSSIF or FaSSGF. You can buy it for your lab. In the words of one of our customers, ***Krka***:

"Now there is only one way of preparation for us – SIF Powder, because there are only benefits. It saves a lot of time (by our calculations more than 50%) and the best part is very simple preparation. It's also very user friendly because with powder we can prepare low volumes of media (e.g. for solubility testing)."

Directions for use

How to make FaSSIF, FeSSIF and FaSSGF with SIF Powder Original



Protocol 1:

The desired biorelevant medium is made by dissolving the appropriate amount of SIF Powder Original in the recommended blank buffer (for FaSSIF and FeSSIF) or NaCl/HCl solution (for FaSSGF).

SIF Powder Original	Powder weight	FaSSIF made	FeSSIF made	FaSSGF made
2.5L Bottle	5.6G	2.5L	0.5L	93.8 L
25L Bottle	56.0G	25.0L	5.0L	938.0 L
250L Bottle	560.0G	250.0L	50.0L	9380.2 L

To make 1.000 L of FaSSIF-V2

STEP 1 ● Prepare buffer

Dissolve: **1.392 g** of NaOH (pellets),
2.220 g of Malic acid,
4.010 g of NaCl,
in about 0.900 L of purified water.

● Adjust the pH to 6.5 with either 1 N NaOH or 1 N HCl.

● Make up to volume (1.000 L) with purified water at room temperature.

STEP 2 ● Add SIF Powder

Add **1.790 g of SIF Powder FaSSIF-V2 to** about 0.5 L of buffer.

Stir until powder is completely dissolved.

Make up to volume (**1.000 L**) with **buffer** at room temperature.

● it's Ready to use

Let FaSSIF-V2 stand for 2 hours.

Your FaSSIF-V2 is ready to use. Use within 48 hours at room temperature and 24 hours at 37°C.

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Technical and Scientific Information

Dissolution and solubility test

Dissolution of five drugs were tested in FaSSIF-V2 made from SIF Powder FaSSIF-V2. These were compared to profiles of the same drugs tested in biorelevant media prepared using methylene chloride (dichloromethane) (figures 1 to 5 below). The dissolution profiles in media produced by either method were found to be equivalent, as assessed statistically using the similarity factor (f2) as proposed by the FDA [1].

Background:
The conventional method of preparing biorelevant media involves forming a methylene chloride emulsion and the evaporation of the solvent in a rot ary evaporator [3] . SIF Powder FaSSIF-V2 is an instant powder that makes the biorelevant media FaSSIF-V2 (Fasted State Simulated Intestinal Fluid Version-2) by adding the powder to the appropriate blank buffer

Objective:
● Determine the dissolution profile of five commercially available (immediate release) drug products studied by Galia et al. [2] using FaSSIF-V2 prepared using methylene chloride
● Determine the dissolution profile of five commercially available (immediate release) drug pro ducts studied by Galia et al . [2] using FaSSIF-V2 made from SIF Powder FaSSIF-V2 .
● Statistically compare the release profiles of the two methods using the similarity factor (f2) [1]

Results summary:
The similarity factor (f2) comparing the dissolution profiles of each of the five drug product s in FaSSIF-V2 made from SIF Powder - V2 and prepared using methylene chloride are presented. The f2 for the release of Ketoconazole could not be assessed because the levels of drug released within the experimental time in the dissolution test were too low (< 0.5% after 2 hours). The purpose of using the similarity factor (f2) in this study is to compare the similarity of the two preparation methods. An f 2 value above 50 indicates that two profiles are similar and differ by less than 10 % [4].

Table 2 f 2 values for comparing the dissolution profiles of the five drug products in FaSSIF-V2 made from SIF Powder FaSSIF-V2 and prepared using methylene chloride

Drug Product	f2 values FaSSIF-V2
Paracetamol 500mg tablets	82.2
Metopropolol tartrate 100mg tablets	92.2
Danazol 100mg capsules	99.6
Mefanamic acid 250mg capsules	95.1
Ketoconazole 200mg tablets	n/a

Conclusion:
From the Figures 1 to 4 , it can be seen that the method of making the biorelevant media FaSSIF-V2 does not significantly affect the dissolution of the five drug products tested. FaSSIF-V2 made from SIF Powder FaSSIF-V2 gave equivalent solubility results compared to the medium prepared using methylene chloride. The f 2 values comparing the two different methods were always greater than 5 0 indicating that there was less than 10% difference between the two methods.

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Detailled methods and results

●Ingredients for making FaSSIF-V2 from SIF Powder FaSSIF-V2

Ingredient	P/N
SIF® Powder FaSSIF-V2	1D1011
Maleic Acid	02129
Sodium hydroxide (pellets)	141814
Sodium chloride	89678A
HCl 1N	11439
Water (deionized)	45742A

●Ingredients for preparing FaSSIF-V2 using methylene chloride

Component	P/N
Lecithin (phospholipid)	397460
Sodium taurocholate	15284
Methylene chloride (dichloromethane)	IEV63
Maleic Acid	02129
Sodium hydroxide	141814
Sodium chloride	89678A
HCl 1N	
Water (deionized)	45742A

●The FaSSIF-V2 medium was made by dissolving the appropriate amount of SIF Powder FaSSIF-V2 in the recommended blank maleate buffer. Use the FaSSIF-V2 calculator on our website to calculate the exact composition for your required volume.

●FaSSIF-V2 was prepared using methylene chloride as per the method reported by Jandratid et al. [3]. The taurocholate is dissolved in about 500 mL of the blank buffer. After the taurocholate dissolves completely a freshly prepared solution of lecithin in methylene chloride is added. From the resultant emulsion, the methylene chloride is removed using a rotary evaporator (40°C for 15 min at 250 mbar followed by 15 minute s at 100 mbar). Finally, the dispersion is made up to a volume of 2 L with the appropriate buffer.

Tested drugs

Drug	Manufacturer/Supplier
Danazol	Mylan, UK
Metoprolol tartrate	Daiichi-Sankyo, Switzerland
Mefenamic acid	Pfizer, Switzerland
Ketoconazole	Janssen-Cilag, UK
Paracetamol	Boots Pharmaceuticals, UK

●Content analysis using HPLC-UV
The HPLC method was developed in-house:

▪HPLC - Type: 1200 Series, Agilent
▪Eluent A: Water + 0.1 % formic acid
▪Eluent B: Acetonitrile + 0.1 % formic acid
▪Column: SunFire C18, 50 x 4.6 mm, 3.5 µm
▪Column temperature: 40 °C
▪Flow rate: 1.2 ml/min
▪Standard solution diluent: Acetonitrile/Water 3:1 v/v

▪Detection wavelength used for each drug :
285nm (Danazol), 220nm(Ketoconazole),
280 nm (Mefanamic acid), 222nm (Metopropolol tartrate), 245nm (Paracetamol)

▪Gradient used:
0min @5% B, 1.0min @ 5% B, 4.0min @ 95% B, 6.0min @ 95% B, 6.1min @ 5%B, 8.5min @ 5% B.

The HPLC analyses for drug content were performed at n=1

●Dissolution in FaSSIF-V2
All drug products tested were immediate release formulations. The dissolution profile of each product was determined in a USP 2 apparatus (Pharmatest PTWS300) using the same parameters as described by Galia et al [2] . The study used 500 mL of degassed FaSSIF-V2 (made using SIF Powder FaSSIF-V2 or prepar ed using methylene chloride) and were carried out at 37°C±0.5°C. Dissolution in each media was carried out in triplicate (n=3) . All samples were removed from the middle of the vessel using a 2 mL syringe. The samples were filtered through a 0.22 µm PVDF filter after discarding the first 200 µl to prevent the effect of possible adsorbed drug at the filter. The dissolution parameter s for each drug product are described in Table 1.

Table 1 Dissolution parameters used

Drug Product	Rotations per minute (rpm)	Sample time points (minutes)
Danazol 100mg capsules	100	5, 10, 20, 30, 60, 90
Lopresor® 100mg tablets	100	5, 10, 15, 20, 30, 60
Mefanamin Pfizer® 250mg capsules	50	5, 10, 15, 20, 30, 60
Nizoral® 200mg tablets	100	5, 10, 15, 20, 30, 60, 120
Paracetamol 500mg tablets	100	5, 10, 15, 20, 30, 60

Japanese sinkers were used for both capsule formulations whereas the tablet formulations were dropped into the corresponding vessel.

Results of Dissolution profile in FaSSIF-V2

The dissolution profiles of the five drug products in FaSSIF V2 made from SIF Powder FaSSIF-V2 and prepared using methylene chloride (MC) are shown in Figures 1 - 5 with the similarity factor (f2) stated in the top right of each Figure. The standard deviations are expressed with error bars.

Figures 1-5. Dissolution profiles in FaSSIF-V2 made from SIF Powder FaSSIF-V2 and prepared using methylene chloride

Figure 1 - ¨Paracetamol

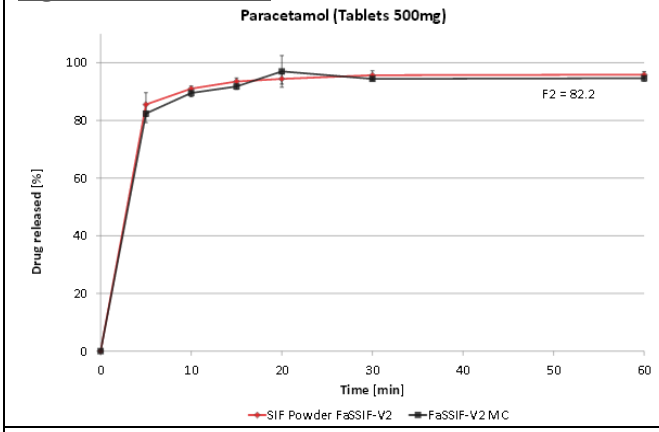


Figure 2 - Metoprolol

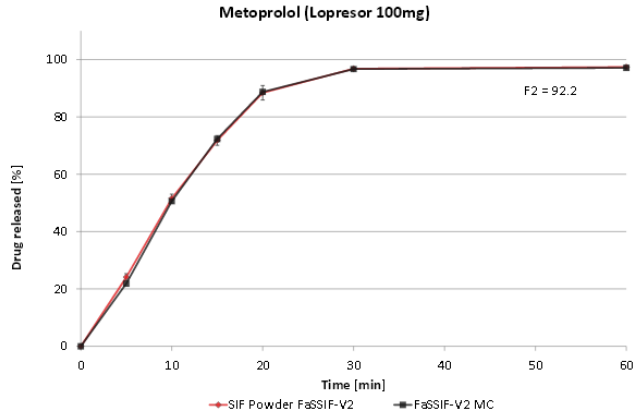


Figure 3 - ¨Danazol

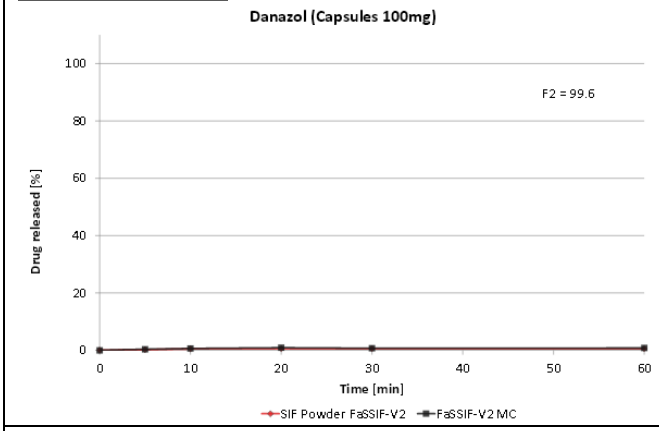


Figure 4 - ¨Mefenamic acid

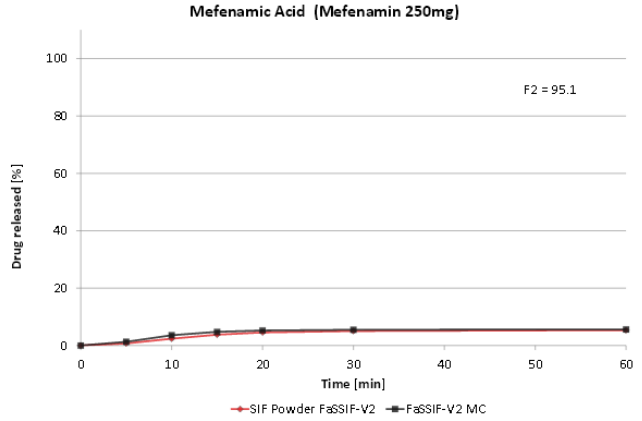
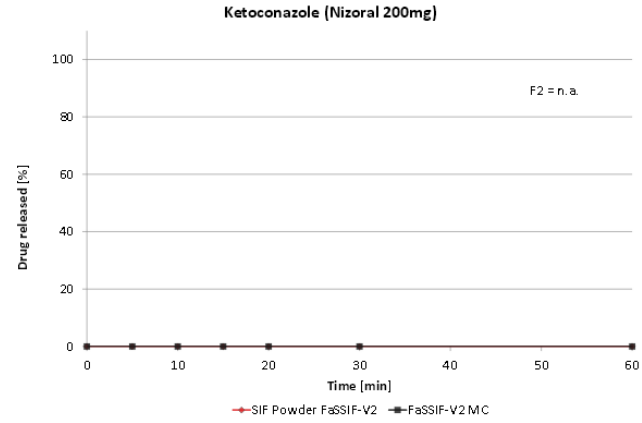


Figure 5 - ¨Ketoconazole



References:

[1] FDA. Guidance for Industry: Dissolution testing of immediate release solid oral dosage form. 1997

[2] Galia E, Nicolaides E, Hörter D, Löbenberg R, Reppas C, Dressman JB. Evaluation of various dissolution media for predicting in vivo performance of class I and II drugs. Pharm Res. 1998 May;15(5):698-705.

[3] Ekarat Jantrarid et al., Dissolution Media Simulating Conditions in the Proximal Human Gastrointestinal Tract: An Update . Pharm Res. Vol.25, No.7, July 2008

[4]http://www.dissolutiontech.com/DTresour/899Art/DissProfile.html

Ask for the full study "biorelevant dissolution tests with SIF Powder"

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Other technical data - references

Comparison of the Solubility and Dissolution of Drugs in Fasted-State Biorelevant Media (FaSSIF and FaSSIF-V2)
Mathew Leigh*, Bastian Kloefer, and Michael Schaich
Dissolution Technologies | August 2013, pp.44-50 Article [].

Related / associated products and documents

SIF Powder, Original #1A7101 – Technical sheet

Ordering information

Catalog size quantities and prices may be found at http://www.interchim.com.
Please inquire for higher quantities (availability, shipment conditions).

Please contact InterBioTech – Interchim for any other information
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