### LT140 GL Sciences Inc.

# Analyzing Propranolol Hydrochloride in Biological Samples by HPLC

We present a preprocessing method using MonoSpin SCX and propranolol hydrochloride analyses in biological samples using a laser-excited fluorescent detector LIF726.

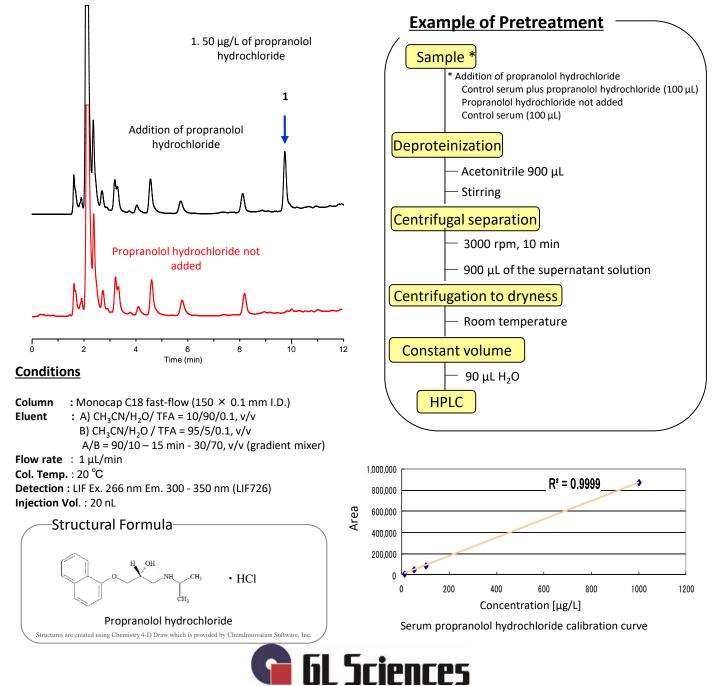
Propranolol hydrochloride is a  $\beta$ -blocker that is used to treat angina, arrhythmias, and high blood pressure. This is one of the drugs that require blood monitoring because of the close therapeutic and poisoning range of blood concentrations, in addition to the large individual differences in drug metabolism. The therapeutic range is determined to be 10 µg/L to 100 µg/L in plasma, which requires a highly sensitive detection method. The laser-excited fluorescence detector used here enables sensitive and selective detection by using a laser as the source of the fluorescence detector.

10 n pages, we added propranolol hydrochloride to sera, then deproteinized them with organic solvents, and measured them HPLC. On p. 3, plasma was pretreated with propranolol hydrochloride followed by MonoSpin SCX and analyzed.

(A. Tamura)

# 1. Analysis of Serum Propranolol Hydrochloride

Propranolol hydrochloride solution was added to the control serum, followed by deproteinization and analysis.



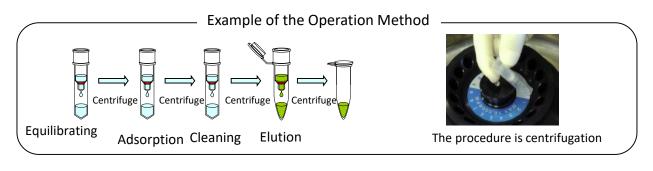
Since LIF726 is a highly selective detector, only simple deproteinization can be performed to analyze drugs in sera. However, there are many contaminants associated with plasma drugs compared with sera, so we present examples of using MonoSpin as a contrivant pretreatment method.

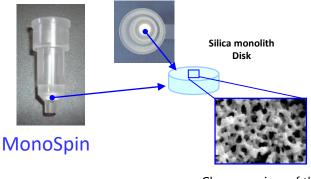
### What is MonoSpin?

The MonoSpin series is a spin-column using silica monoliths with uniform continuum pores. Silica monoliths with high porosity are used as carriers, so they can be passed through by centrifugal manipulation alone.

Therefore, it is possible to purify and concentrate samples by a simple operation in a short time.

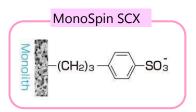
It is also suitable when the sample volume is small because the bed volume is small and the liquid can be cut off.





Close-up view of the silica monolith.

## About MonoSpin SCX



Strongly acidic functional groups have been modified in the MonoSpin SCX. It combines strong cation exchange and weak hydrophobic interactions and is therefore optimal for the extraction of basic drugs.

## Principles of Pretreatment using MonoSpin SCX

In the MonoSpin SCX, the strongly acidic functional group propylbenzenesulfonic acid (SO  $_3$  H) is modified, and sulfonic acid is in the dissociated state (SO  $_3$ <sup>-</sup>) regardless of the pH of the solution through which it passes. On the other hand, basic compounds are in a dissociated state in acidic and neutral solutions.

First, when basic compounds are added to the MonoSpin SCX under acidic conditions, they adsorb by ionexchange action. After washing with acidic aqueous solution, acidic to neutral and hydrophilic compounds are not retained and passed. Finally, an organic solvent with added ammonia water can suppress and elute the dissociation and hydrophobic adsorption of adsorbed basic compounds.

In basic compounds, the target components can be eluted selectively compared with the MonoSpin C18 of hydrophobic interactions alone.



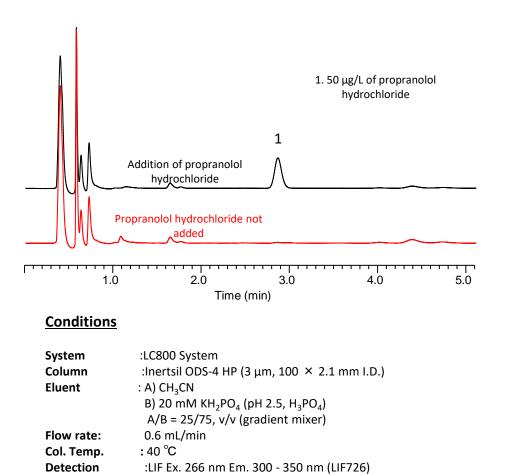
Injection Vol.

:5 μL

## 2. Analysis of Propranolol Hydrochloride in Plasma

Plasma was pretreated and analyzed with MonoSpin SCX after adding propranolol hydrochloride solutions.

Protocol for the pretreatment process	
Preparations① Washing solventMethanol② Washing solvent2 % aqueous formic acid③ Elution solvent28 % ammonia water/methanol= 5/95, v/v	Attach waste liquid tubes to the MonoSpin SCX Washing solvent 450 μL Centrifuge Washing solvent 450 μL Centrifuge Sample solution 450 μL Centrifuge § +(b) 450 μL of washing solvent. Centrifuge
<mark>Sample solution</mark> Plasma 90 μL +500μg/L propranolol hydrochloride solution 10μL + H <sub>2</sub> O 400 μL 500 μL	<ul> <li>↓</li> <li>Replace with a retrieval tube</li> <li>Elution solvent 90 µL</li> <li>Centrifuge</li> <li>↓</li> <li>Inject the recovered solutions into HPLC systems</li> </ul>
	* All centrifugations were performed at 10,000 g for 1 min.





### MonoSpin SCX

Cat. No. 5010-21725 (50) Cat. No. 5010-21726 (100)

\* There are also trial kits for initial review!

MonoSpin Trial Kit 1: Optimal for Drug and Pesticide Analyses. (C18, SCX, SAX, and 10 TiO) Cat. No. 5010-21740

MonoSpin Trial Kit 2: Optimal for analyzing sugar chains and hydrophilic compounds.

(10 each of C18, Amide, CBA, and NH2) Cat. No. 5010-21741

MonoSpin trial kit 3, optimal for analyzing ionic compounds. (10 SCX, SAX, CBA, and NH2) Cat. No. 5010-21742

GL Sciences disclaims any and all responsibility for any injury or damage which may be caused by this data directly or indirectly. We reserve the right to amend this information or data at any time and without any prior announcement.

<u>GL Sciences, Inc. Japan</u>

22-1 Nishishinjuku 6-Chome Shinjuku-ku, Tokyo, 163-1130, Japan Phone: +81-3-5323-6620 Fax: +81-3-5323-6621 Email: world@gls.co.jp Web: www.glsciences.com

### International Distributors Visit our Website at: https://www.glsciences.com/company/distributor.html

#### GL Sciences B.V. De Sleutel 9 5652 AS Eindhoven

The Netherlands Phone: +31 (0)40 254 95 31 Email: <u>info@glsciences.eu</u> Web: www.glsciences.eu

## GL Sciences (ShangHai) Ltd.

Tower B, Room 2003, Far East International Plaza, NO,317 Xianxia Road, Changning District. Shanghai, China P.C. 200032 Phone: +86 (0)21-6278-2272 Email: <u>contact@glsciences.com.cn</u> Web: www.glsciences.com.cn

### GL Sciences, Inc. USA

4733 Torrance Blvd. Suite 255 Torrance, CA 90503 Phone: 310-265-4424 Fax: 310-265-4425 Email: info@glsciencesinc.com Web: www.glsciencesinc.com

