

# BIOAVAILABILITY STUDY OF LIPOSOMAL VITAMIN C CURESUPPORT



This bioavailability study is performed by  
*Bio Agile Therapeut*

**STUDY NO: CT-0007-17**

## Objective of the Study

To evaluate the oral bioavailability of Liposomal Vitamin C 5ml/1000mg of Curesupport B.V. Zutphenseweg 55, Deventer and Non Liposomal Vitamin C 5ml/1000mg (Reference) Of Curesupport B.V. Zutphenseweg 55, Deventer. In healthy, adult, human subjects under fasting condition.

## Number of subjects

Number of subjects planned : 24

Number of subjects completed the study and analyzed : 24

## Tested product

Product name:  
Liposomal Vitamin C 5ml/ 1000mg

Manufactured by:  
Curesupport B.V.  
Zutphenseweg 55, Deventer.

Batch No : 171106

## Reference product

Product name:  
Non Liposomal Vitamin C  
5ml/1000mg

Manufactured by:  
Curesupport B.V. Zutphenseweg 55,  
Deventer.

Lot No: 171164

## Results:

### Geometric Mean of Reference product (R) and Test product (T) for Ascorbic acid (Vitamin C)

Pharmacokinetic Parameter	N	Reference Product (R)	Test Product (T)
$C_{max}$ (mg/dL)	24	2.1695	5.2386
$AUC_{0-t}$ (mg*hr/dL)	24	31.5286	55.8627
$AUC_{0-\infty}$ (mg*hr/dL)	24	57.1165	78.9010
$t_{max}$ (hr)	24	3.42	3.51
$K_{el}$ (1/hr)	24	0.0365	0.0559
$t_{1/2}$ (hr)	24	18.9995	12.3895

### Statistical Results of Test product (T) versus Reference product (R) for Vitamin C

Pharmacokinetic Parameter	Geometric Least Square Mean		Intra Subject CV (%) (T Vs. R)	T/R Ratio (%)
	Test Product (T)	Reference Product (R)		
$C_{max}$ (mg/dL)	5.2386	2.1695	8.19%	241.47%
$AUC_{0-t}$ (mg*hr/dL)	55.8627	31.5286	13.32%	177.18%
$AUC_{0-\infty}$ (mg*hr/dL)	78.9010	57.1165	23.66%	138.14%

### Oral bioavailability value for Liposomal Vitamin C

Pharmacokinetic Parameter	Test Product (Mean $\pm$ Standard Deviation)	Reference Product (Mean $\pm$ Standard Deviation)	Oral bioavailability value (AUC <sub>0-t</sub> of Test / AUC <sub>0-t</sub> of Reference)
$AUC_{0-t}$ (mg.hr/dL)	(56.3218 $\pm$ 7.3274)	(31.9704 $\pm$ 7.3274)	1.76

## Dose and mode of administration

A single oral dose, 5 ml of test product (T) or Reference product was administered by using syringe (as per randomization schedule) orally, after administration of Investigational Medicinal products, syringe was rinsed with 240 ml of drinking water, at ambient temperature, to the subjects in sitting posture under fasting condition. Treatment administration was separated by wash out period 7 days.

## Conclusion

Based on the results obtained in this study, the test product (T)

Liposomal Vitamin C 5ml/1000mg of Curesupport B.V. Zutphenseweg 55, Deventer are found to be at least 6.6 times more bioavailable than published reports (on healthy, adult, human subjects under fasting conditions) of the competition.

