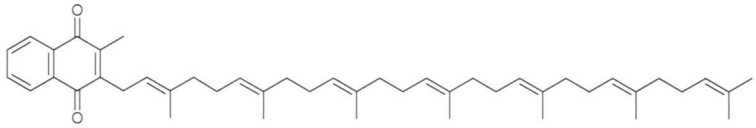
MK-7 REFERENCE STANDARD

CERTIFICATE OF ANALYSIS

Name: **2-(3,7,11,15,19,23,27)-Heptamethyl-octacosa-2*E*,6*E*,10*E*,14*E*,18*E*,22*E*,26*E*-heptaenyl)-3-methyl-[1,4]-naphtoquinone**

CAS-no.: **2124-57-4**
Batch no.: **A_SYN_01_01_63**
Analysed: **September/October 2010**
Retest time: **18 months (January 2012)**
Storage: **2-8 °C, protected from light**
Molecular Formula: **$C_{46}H_{64}O_2$**
Molecular Weight: **649.00 g/mol**
Structure:



Test	Method	Result
Identity Vitamin MK-7	IR ^{1}H NMR ^{13}C NMR	Spectrum conforms Spectrum conforms Spectrum conforms
Appearance	Visual inspection	Yellow powder
Purity Vitamin MK-7*	HPLC	99 % area
Residual solvents		
Diethyl ether	GC/MS	None Detected**
Acetonitrile	GC/MS	None Detected**
Ethyl acetate	GC/MS	None Detected**
Dichloromethane	GC/MS	None Detected**
Hexane	GC/MS	≤0.05% w/w
Tetrahydrofuran	GC/MS	None Detected**
Water	Karl Fischer	<0.1% w/w
Inorganic impurities		
Palladium (Pd)	ICP MS	≤0.001%
Cadmium (Cd)	ICP MS	≤0.001%
Lead (Pb)	ICP MS	≤0.001%
Selenium (Se)	ICP MS	≤0.001%

**) Includes 4% of cis- isomers*
***) Detection limit = 0.01% w/w*
Analyses performed by Synthetica AS (Norway) and Intertek ASG (UK)

The result shows that the substance is suitable for use as a reference standard for vitamin MK-7.

It should be noted that the compound is sensitive to light (especially in solution) and that light exposure should be avoided (use amber glass during analysis etc.).

Date: 20.08.2011 Sign.: Inger Reidun F. Aukrust

Inger Reidun F. Aukrust/CTO