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**ANALYTICAL REPORT**

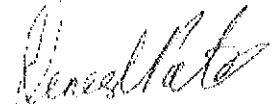
**TO:** Vitamark International  
Houston, TX 77040  
**EMAIL:**  
**DATE:** November 8, 2006

Sample: <b>Original LIMU</b>	Lot Number: <b>016046</b>
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Analyte	Result	Unit
u-fucoidan	0.0124	g / 100 ml
total fucoidan	0.0625	g / 100 ml

density – 1.019 g/ml

Fucoidan analysis performed by GPC, using Shodex KB-804 column, 0.05M NaNO<sub>3</sub> mobile phase, and differential refractometer @ 40°C for detection. Pullulans molecular weight markers used for standard calibration, method adapted from Kariya Y, Mulloy B, Imai K, Tominaga A, Kaneko T, Asari A, Suzuki K, Masuda H, Kyogashima M, Ishii T "Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber" Carbohydrate Research 339 (7): 1339-1346 May 17 2004.



Dinesh Patel, Ph.D.  
Laboratory Director

This Report is issued in accordance with the Standard Terms and Conditions including but not limited to our services and reports (i) are for the benefit of the client only and may not be used by any other party for any purpose and (ii) relate solely to the sample(s) in our possession and cannot be applied to any other material.

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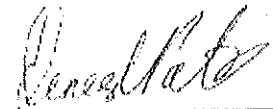
**TO:** Vitamark International  
Houston, TX 77040  
**EMAIL:**  
**DATE:** October 5, 2006

Sample: <b>Limu Plus</b>	Lot Number: <b>69160507</b>
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Analyte	Result	Unit
u-fucoidan	0.2965	g / 100 ml
total fucoidan	0.3125	g / 100 ml
fucoxanthin	0.2302	mg / 100 ml

density – 1.107 g/ml

Fucoidan analysis performed by GPC, using Shodex KB-804 column, 0.05M NaNO<sub>3</sub> mobile phase, and differential refractometer @ 40°C for detection. Pullulans molecular weight markers used for standard calibration, method adapted from Kariya Y, Mulloy B, Imai K, Tominaga A, Kaneko T, Asari A, Suzuki K, Masuda H, Kyogashima M, Ishii T "Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber" Carbohydrate Research 339 (7): 1339-1346 May 17 2004. Fucoxanthin analysis performed using HPLC by method adapted from Joanna Stoń, Alicja Kosakowska "Qualitative and quantitative analysis of Baltic phytoplankton pigments" as published in Oceanologia, 42 (4), 2000; utilizing a sample extracted with 30 ml ice-cold acetone sonicated/shaken for 45 min, centrifuged, supernatant isolated and evaporated in vacuo and residue was dissolved in 0.3 ml hexane/ethanol/methanol (1:5:44) and analyzed on two columns of 3 µm Adsorbosphere HS C18 (100\*4.6 mm and 150\*4.6 mm in series) at 37°C. The mobile phase (0.9 ml/min) was methanol/acetonitrile (2:3), containing 0.5% ammonium acetate with photo diode array detection scanning 200-600nm. Quantification performed by area comparison to astaxanthin. Authentic astaxanthin chemical reference material obtained from Sigma-Aldrich.



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