

Date: February 2, 2010

### ChromaDex Statement Concerning 3,4-Divanillyltetrahydrofuran

There has been a lot of controversy lately over an ingredient (compound) being sold as “**3,4-Divanillyltetrahydrofuran**” which is a lignan found in a *Urtica dioica* subspecies. This same compound may also be found in other lignan-containing plant sources such as flax seed (*Linum usitatissimum*).

ChromaDex has been testing samples labeled and sold as “>95% 3,4-divanillyltetrahydrofuran” for several years. During this time, we did not test a single sample of this mysterious brown powder that has confirmed identity as >95% 3,4-Divanillyltetrahydrofuran.

With that being said, does that mean that it is not possible that there is an actual >95% 3,4-Divanillyltetrahydrofuran(3,4-DVTHF)? Not at all, as we know that we do in fact have a >95% purity reference standard, (which is an off-white powder and not a brown powder). Since we cannot represent that we have tested all materials available in the market, it is not possible for us to say that 3,4-DVTHF does not exist. We can only say what we know based on the data we have compiled, which is that we have yet to test and pass an authentic sample of “>95% 3,4-DVTHF”, other than the standard we currently offer.

Also, we should clarify that the testing we have performed thus far is related to raw materials or ingredient samples. We have not performed testing on finished products at this point. Availability of the reference standard should make finished product testing possible, however until the problems with identity of these materials has been solved there is no point in development of a method for analysis of 3,4-DVTHF in anything.

ChromaDex currently offers a reference standard for a compound listed as (+)-ANHYDROSECO-ISOLARICIREBINOL, (ANSECO)(P), ChromaDex part# ASB-00019101, which is a lignan isolated from flax seed. ANSECO is a synonym for 3,4-Divanillyltetrahydrofuran, meaning that they are the same compound with the same chemical structure, and the same CAS#.

CAS# 34730-78-4

Empirical Formula: C<sub>20</sub>H<sub>24</sub>O<sub>5</sub>

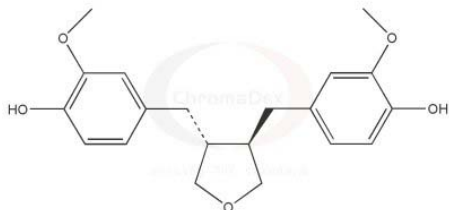
Molecular Weight: 344.4016

**IUPAC Name:** 4-[[4-[(4-hydroxy-3-methoxyphenyl)methyl]oxolan-3-yl]methyl]-2-methoxyphenol





**Chemical Structure :**



ChemSpider Listing for CAS# 34730-78-4

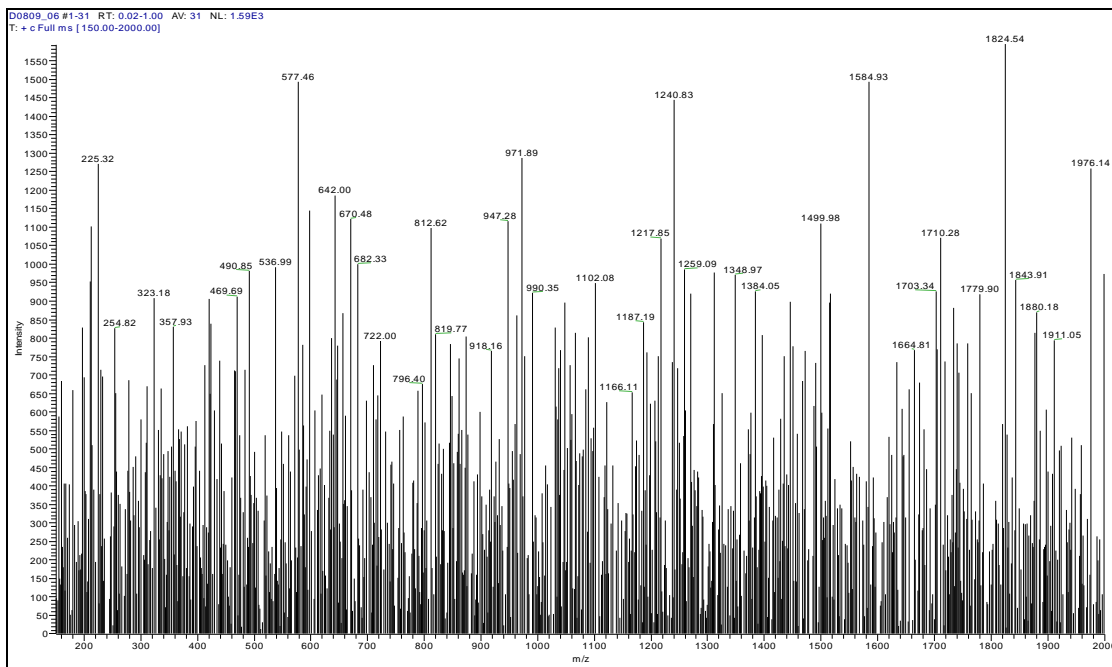
<http://www.chemspider.com/Chemical-Structure.158474.html>

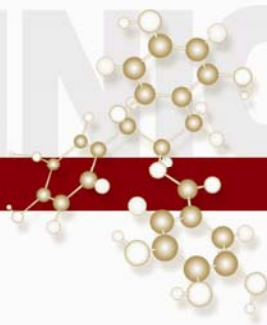
PubChem Listing for CAS# 34730-78-4

<http://pubchem.ncbi.nlm.nih.gov/summary/summary.cgi?sid=759553>

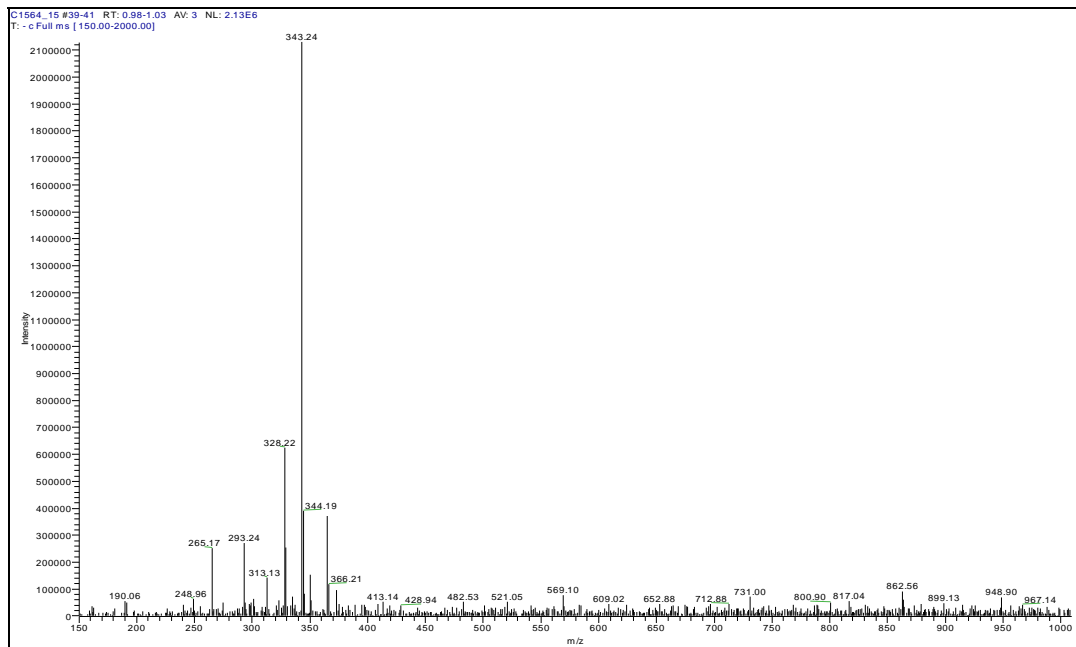
Here is the supporting analytical data:

**Mass Spec Data for "Test Sample" Material labeled as >95% DVTHF**

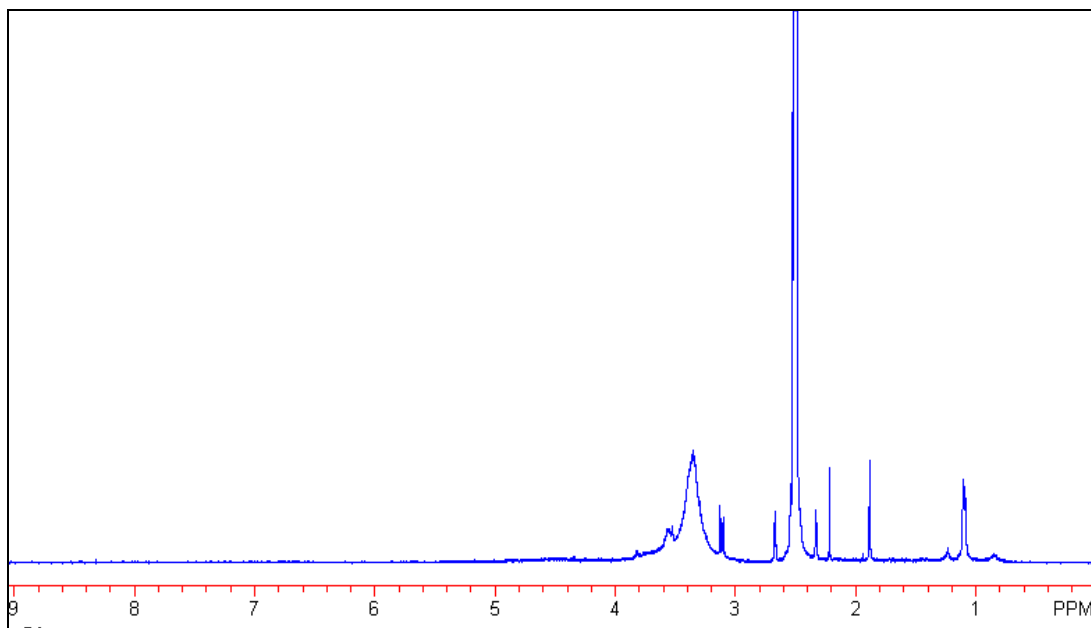




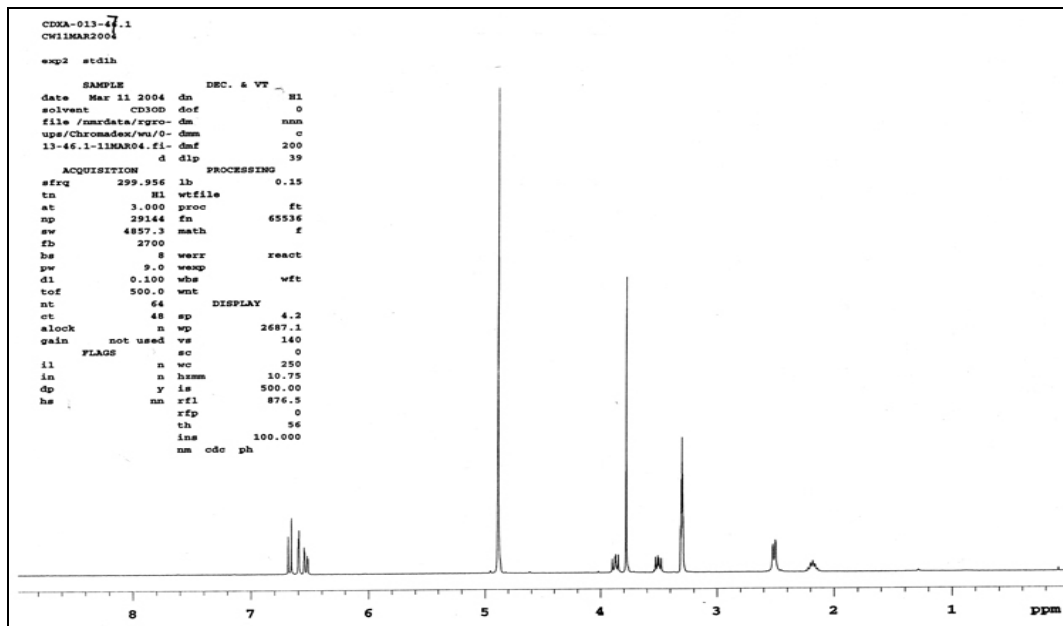
## Mass Spec Data for ChromaDex Reference Standard for 3,4-DVTHF(ANSECO)



## NMR Data for "Test Sample" labeled as >95% DVTHF



### NMR Data for ChromaDex Reference Standard for 3,4-DVTHF(ANSECO)



#### Explanation of Analytical Data:

Based on the mass spec and NMR data above, it is readily apparent that these materials being represented as “>95% DVTHF” bear little to no resemblance to the expected values of a compound of that structure. A side-by-side comparison of the analytical data above for the ChromaDex standard 3,4-DVTHF(ANSECO) and the test sample represented as “>95% DVTHF” clearly shows that there is no match.

#### So if this “>95% DVTHF” Material is Not DVTHF...What is It?

Very good question, however this is sometimes a difficult question to answer. Proving the identity of an “unknown” can be a very expensive proposition. With that being said, we have attempted to find out what this mysterious brown powder is since we know that it is not >95% 3,4-DVTHF. The first clue is that all of the samples we have received thus far are all brown powders, which is usually a good sign that we are not dealing with a high purity material. Since we already know that the DVTHF reference standard material is off-white, our first approach was to determine if this material is a crude botanical extract.

Most of the information we received about 3,4-DVTHF seemed to indicate that this material was derived in some way from Nettle (*Urtica dioica*), so the logical place to start was there. ChromaDex offers a botanical reference material (BRM) for Nettle (*Urtica dioica*), so we had a good place to start. We took the ChromaDex Nettle BRM and we performed different types of extractions. Those extracted materials were compared against the brown powder and sure enough we found a match between the crude nettle BRM



extract and the brown powder called >95% DVTHF. Our initial assessment is that the material being labeled and sold as “>95% DVTHF” is in fact nothing more than a crude extract of Nettle.

If the market is going to continue to use this raw material currently being labeled and sold as “>95% DVTHF”, the material should be renamed or relabeled according to the true identity of the contents. At this point further information would be needed to fill in the missing pieces, and then further research and analytical testing would be required to prove the identity, composition and potency of this material.