

# THE UPLINK

Merging Contemporary Chiropractic Neurology and Nutritional Biochemistry in the Tradition of Applied Kinesiology

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## TO BETAINES OR NOT TO BETAINES

Betaine (trimethylglycine) is an important methyl donor found in beets and many supplements, both as a main ingredient as well as associated with hydrochloric acid (betaine HCl). However, some of our patients can not metabolize this seemingly innocuous nutritional substance resulting in recurrent problems that may aggravate any other symptom, and especially liver and kidney problems.

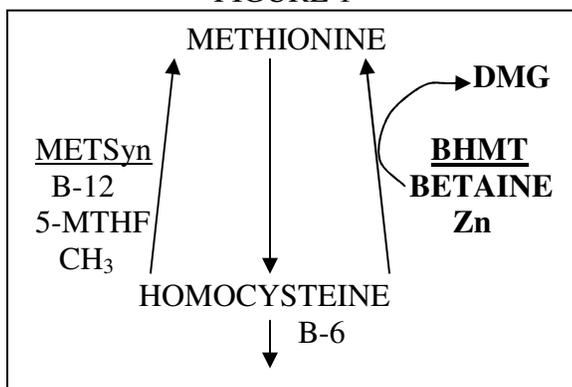
Methyl donors like betaine and choline are essential for numerous metabolic pathways, including that of homocysteine (Hcy) conversion. As discussed in previous issues of *THE UPLINK* (#24, #25, #26, and especially #38), there are at least five steps in the **QA Clinical Protocol** where Hcy metabolism problems may be found allowing the doctor to identify this significant risk factor for *heart attack, stroke, cancer, neurological disorders*, and other diseases.

## THE "OTHER" HCY METABOLIC PATHWAY

As you recall, the following nutrients are necessary for Hcy metabolism: *B-12, folic acid, B-6, (in their activated, coenzyme forms) and a methyl donor such as betaine or choline*. Most sources that discuss Hcy lump all of these nutrients together. Many products containing all of these nutrients are available today.

In fact, there are three distinct pathways that participate in the conversion of Hcy as you can see in Figure 1 below. Two of these "recycle" Hcy into methionine (MET).

FIGURE 1



The most popular Hcy re-methylation pathway is via the methionine synthase (METSyn) enzyme. This B-12 dependent enzyme causes 5-MTHF (i.e., activated folic acid) to pass a methyl group to Hcy converting it into MET.

## BHMT

In Figure 1 the pathway on the right uses the enzyme Betaine-Homocysteine Methyl Transferase (BHMT) which adds a methyl group directly from betaine to Hcy to produce MET. In the process, N,N Dimethylglycine (DMG) is produced from betaine.

BHMT is most active in the liver and also in the kidneys. BHMT is zinc dependent, hence, a need for zinc can limit BHMT activity. BHMT enzyme is also under genetic control. Genetic variants (single nucleotide polymorphisms – SNPs) of the BHMT genes can cause under production of BHMT.

BHMT is sort of a back-up system for Hcy conversion to MET. Inadequate BHMT activity can cause lowered Hcy metabolism (and betaine excess.) If BHMT is underactive, it may not be seen on a casual Hcy blood test. There is a protocol with a MET load followed by an Hcy blood test that will more likely show a BHMT-related increased Hcy.

Symptoms related to this betaine conversion problem include any of the elevated Hcy problems already outlined as well as inflammatory problems, low energy, and muscle fatigue. Decreased BHMT can contribute to neural tube defects. Autistic patients may be in this category since DMG often helps them.

## DMG STRENGTHENS - BETAINES WEAKENS

Usually the patients who have a problem with the metabolism of betaine to DMG via BHMT are difficult or chronic. When present, this problem is found when testing liver detoxification in **QA Step 19**. These patients will show a strengthening response on oral nutrient testing with DMG (and occasionally MET or GLY.) As you may suspect, betaine will create a weakening response, but usually only on TL to the liver and/or kidney Chapman's reflexes (CRs).

## PROCEDURE

1. Pinching the liver VRP will strengthen a weak muscle during **QA Step 19**, the usual Liver step.
2. DMG will strengthen a weak muscle
3. Check for a possible zinc need.
4. Betaine supplement will cause weakness, usually not in the clear, but upon TL to the Liver CR and the Kidney CRs.
5. Correction is IRT to the involved CRs with betaine in the mouth.
6. Supplement DMG and/or zinc. Avoid betaine.

■ **THE UPLINK HAS BEEN ON SABBATICAL:** Usually we put out 3-4 issues of THE UPLINK a year. However, it has been one full year since our last issue. Many university professors take a year of sabbatical to write a book. We (Dr. Kerry McCord and Dr. Schmitt) spent the better part of the last year revising (for the first and last time) the **QUINTESSENTIAL APPLICATIONS A(K) Clinical Protocol** manual. So we are just calling it a year of sabbatical for **THE UPLINK**. Producing the **QA 2<sup>nd</sup> Edition** was a far more time-consuming task than either of us imagined, but we think you will agree that the final product was worth the effort. See next...

■ **QUINTESSENTIAL APPLICATIONS A(K) Clinical Protocol 2<sup>nd</sup> Edition** is now available. It encompasses all of the suggestions that we received from the first edition as well as feedback from the first **QA** seminar series attendees. The **QA 2<sup>nd</sup> Edition** includes much additional background material including over 50% more appendix pages. There is also a much-requested Index. Fundamentally, all of the procedures are the same with slight changes in wording to make each step of the **QA Clinical Protocol** consistent in format. If you own the first edition, you can purchase the **QA 2<sup>nd</sup> Edition** for the discounted price of \$199 plus S&H.

■ **SOURCES OF DMG:** DMG is very hydrophilic (i.e., it strongly attracts water from the air.) If a DMG pill is put on a piece of paper, after a few minutes, a wet spot will appear. For this reason, some DMG sources come in individual sealed wrappers. Below are some sources of DMG that we have found:

- DMG – Progressive Labs (Houston, TX) (800) 527-9512, [www.progressivelabs.com](http://www.progressivelabs.com). This is a 125 mg. pill enclosed in aluminum foil sheets in a plastic jar.
- DMG – Da Vinci Labs of Vermont, 800-325-1776, [www.davincilabs.com](http://www.davincilabs.com). DMG in 125 mg., 250 mg., or 350 mg. sizes. In aluminum foil and plastic sheets enclosed in a box. Contains xylitol as a sweetener and other excipients.
- Liquid DMG – 100, 250, and 500 ml bottles. Metabolics Ltd. [www.metabolics.com](http://www.metabolics.com)
- Calcium Pangamate - B-15 – Dee Cee Labs, White House, TN, Phone: 1-800-251-8182, [www.deeceelabs.com](http://www.deeceelabs.com). These are tablets which each contain 50 mg. of DMG in a plastic bottle.

■ **UNIVERSITY OF MIAMI MILLER SCHOOL OF MEDICINE** will be the site of five seminars this fall. Dr. Schmitt will teach two Saturday and Sunday nutrition seminars: “Clinical Pearls for an Integrated Practice I & II”. Part 1: Sept.12-13, & Part 2: Oct. 17-18. Dr. Kerry McCord will be teaching a **QA** One-Day seminar “What to do First, Next, and Last” on Saturday Nov. 14<sup>th</sup>. Two other unique seminars will be taught on the Fridays, September 11<sup>th</sup> and October 16<sup>th</sup>. See next.

■ **STOP YOUR PAIN NOW! AT UMMSM:** Two 4-hour seminars will be taught by Dr. Schmitt based on his book. On Friday Sep.11, the topic will be “Hands-on Pain Relief” and on Friday October 16 he will teach “Nutritional Factors in Pain Relief.” See seminar list.

■ **QUINTESSENTIAL APPLICATIONS – CHICAGO** begins on September 19-20, 2009. Dr. Schmitt and Dr. Kerry McCord will share teaching duties. See the Seminar Schedule for dates. Chiropractic CE credits are available for Session1 and Session 7 for a number of states. The **QA** Level 1 Proficiency Exam will be given at the end of Session 7 for those who have attended or purchased the DVDs of all 7 sessions. This is the only on-site offering of the **QA** program presently scheduled. Contact National AK Club or see [www.theuplink.com](http://www.theuplink.com) for more details.

■ **QUINTESSENTIAL APPLICATIONS One Day & Two Day Seminars** are being presented around the country by Dr. Schmitt and Dr. McCord. These overview seminars will give you tools you can use immediately in your practice, but more importantly, they will introduce you to the **QA** thought process that will help you to begin to organize your techniques more effectively than you have ever imagined.

■ **QA ON YOU TUBE:** Video clips from the **QA** DVDs are now on You Tube. There are 25 of them. You can search “Walter Schmitt” or “Kerry McCord” and these videos will show up.

We have also uploaded several video clips from last November’s **QA** One-Day seminar. These include: “Applied Kinesiology – The Neurological Basis” and “Applied Kinesiology – A Tribute to Founder Dr. George Goodheart.” Search “applied kinesiology” and you should find these.

**THIS ISSUE’S SPECIAL OFFER!**

**“QUINTESSENTIAL APPLICATIONS”**

**ENROLL AT HOME SPECIAL**

**QA BOOK – 2<sup>nd</sup> Edition**

**QA SESSION 1 DVDs**

**QA AUDIO CDs**

**\$599**

(+ \$16 US S&H = \$615)

(Save \$80)

Call (919) 545-8829 or Fax order form to (919) 419-9049

Offer ends October 31, 2009

■ **WEBINARS:** Dr. Schmitt & McCord are teaching webinars. The seminar schedule has times & topics. More are planned in the future.

■ **16<sup>TH</sup> ANNUAL SKI WITH WALLY SEMINAR:** At the Steamboat Springs Sheraton - ski-in / ski-out. March 11-13, 2010. Mark your calendars now.

■ **9<sup>TH</sup> ANNUAL WAT SKI SEMINAR IN TAOS, NM** will be taught by Drs. Wally Schmitt, Andy Specht, and Tom Rogowsky February 4, 5, & 6, 2010 at the Alpine Village Suites in Taos Ski Village. Hotel space is VERY limited. See [www.theuplink.com](http://www.theuplink.com) for details. Contact Michelle to register.

