Happy New Year!
This year *Nutrition Nibbles* will be focusing on vitamins and minerals. This topic has been chosen based on results from the Nutrition and Food Safety Survey. A survey is enclosed. Please take a moment to provide feedback about the types of information you would like to see addressed in future programming and newsletters. This will help me be sure I am addressing issues important to you.

Vitamins and minerals were originally “prescribed” as a means to prevent deficiency. As the field of nutrition has grown, vitamins and minerals are now viewed not only as a means to prevent deficiency but also to prevent and/or treat illness. Given the complexity of vitamins and minerals I will try to keep the discussion easy to understand therefore I will not be able to address all areas.

Also, I am not suggesting you add vitamin or mineral supplements to your diet. Before adding any type of supplement (vitamin, mineral or herbal) you should talk with your health care provider and pharmacist.

This issue will give background information on vitamins and minerals as well as talk about Vitamin B12. This vitamin has been selected because of the interest peaked by a study published in *Neurology*, September 2008.

If you have questions or comments regarding the content of *Nutrition Nibbles* or wish to be added to the mailing list please contact me at sfranci4@uwyo.edu or 328-2647.

Eat Well!

Sarah L. Francis, PhD, MHS, RD
Extension Nutrition and Food Safety Educator
The science of nutrition has been around since people started making the connection between certain foods and diseases. Early Egyptian and Greek literature discuss how certain foods were used to heal. For example, ox liver was frequently used to treat anemia. Although food was used for its healing power, the ways in which it helped were not studied until the 1900's.

During the early 1900's scientists discovered minerals and "accessory factors." It was believed all "accessory factors" contained nitrogen which made their structure an "amine." A nutrition scientist, Casimir Funk, came up with the term "vitamine." This was eventually shortened to the current term vitamin, once it was realized not all vitamins have nitrogen.

Early studies showed minerals and vitamins were essential to health. When they were removed from the diet deficiencies developed.

## HISTORY OF VITAMINS AND MINERALS

Minerals make up about 4% of our body weight.

### Macromineral
Minerals the body needs in milligram amounts daily. Those involved with electrolyte balance (sodium, potassium, chloride) are found in smaller amounts because of how quickly the body uses them. The others (calcium, phosphorus, and magnesium) are found in much higher amounts.

### Micromineral
The body needs very small amounts of these minerals to maintain health. Almost all of these minerals can be found in the bones and teeth.

Types: iron, zinc, iodide, selenium, chromium, manganese, fluoride, cobalt, silicon, arsenic, boron, vanadium, nickel, cadmium, lithium, lead and molybdenum. The first four listed are the most studied.

## Vitamins

**Water Soluble**: Soluble in water. Assist in the breakdown and use of protein, fats, and carbohydrates. If someone consumes more water soluble vitamins than the body needs, the body gets rid of the extra in urine. The exception is Vitamin B12 which is stored.

Includes: Vitamin C, Thiamin (B1), Riboflavin (B2), Niacin (B3), Pantothenic acid, Biotin, Vitamin B6, Folic Acid (Folate), and Vitamin B12

**Fat Soluble**: Not soluble in water. The absorption and transport of these vitamins is related to that of fats (lipids). Extra of these vitamins is stored in fat for later use.

Includes: Vitamins A, D, E and K

Sources:


The “Alphabet Soup” of Vitamins and Minerals

**Dietary reference intakes (DRIs)** are dietary recommendations based on four different recommendations for healthy people. DRIs are based on adequate intakes (AI), estimated average intake (EARs), Recommended Daily Allowances (RDAs), and tolerable upper intake (UL) levels. Previously RDAs were recommendations for preventing deficiencies. However, given the amount of nutrition research findings in the last decade or so, we now know of health benefits in addition to deficiency prevention.

**AI** values are based on observed or experimental values and are estimates for healthy populations. These were compiled when scientific evidence was limited and not available for RDAs and EARs recommendations.

**EARs** are the average nutrient requirement for healthy groups. These are amounts of a nutrient where half the population would meet his/her needs and the other half would not.

**RDAs** are the nutrient amounts needed to meet the requirements of nearly all (97-98%) of the healthy population. RDAs should serve as goals for intake not as a benchmark of diet adequacy.

**ULs** are set for nutrients with adequate data. It is the highest level of daily nutrient intake that is unlikely to have any negative health effects on almost all individuals in the general population.

Source:

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**Vitamin B12**

Vitamin B12 is the only water soluble vitamin that is stored in the body. It is needed to maintain the normal function of all cells including those in the gut, nerves and bone marrow. According to two national diet surveys (National Health and Nutrition Examination Survey [NHANES-III 1988-94] and the Continuing Survey of Food Intakes by Individuals [CSFII 1994-1996]) American children and adults are consuming the recommended amounts of Vitamin B12.

A deficiency can occur in people who have health conditions that can affect how nutrients are absorbed, older adults, and strict vegetarians (vegans who omit all animal products from their diets without supplementing).
## Vitamin B12 Content of Foods

<table>
<thead>
<tr>
<th>FOOD</th>
<th>VITAMIN B12 (micrograms/serving)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver, beef, 3.5 oz</td>
<td>95.0</td>
</tr>
<tr>
<td>Clams, canned, 3 oz</td>
<td>84.1</td>
</tr>
<tr>
<td>Crab, Alaskan king, raw, 3 oz</td>
<td>9.8</td>
</tr>
<tr>
<td>Fortified cereal, (100% fortified), ¾ cup</td>
<td>6.0</td>
</tr>
<tr>
<td>Trout, rainbow, wild, cooked, 3 oz</td>
<td>5.4</td>
</tr>
<tr>
<td>Salmon, sockeye, cooked, 3 oz</td>
<td>4.9</td>
</tr>
<tr>
<td>Tuna, light, canned, in water, 3 oz</td>
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</tr>
<tr>
<td>Beef, hamburger, lean, broiled, 3.5 oz</td>
<td>2.5</td>
</tr>
<tr>
<td>Beef, top sirloin, lean, choice, broiled, 3 oz</td>
<td>2.4</td>
</tr>
<tr>
<td>Halibut, baked, ½ fillet</td>
<td>2.2</td>
</tr>
<tr>
<td>Cottage cheese, 1 cup</td>
<td>1.6</td>
</tr>
<tr>
<td>Fortified cereal, (25% fortified), ¾ cup</td>
<td>1.5</td>
</tr>
<tr>
<td>Yogurt with fruit, 8 oz</td>
<td>1.1</td>
</tr>
<tr>
<td>Pork chop, boiled, 3.5 oz</td>
<td>0.9</td>
</tr>
<tr>
<td>Skim milk, 1 cup</td>
<td>0.9</td>
</tr>
<tr>
<td>Egg, whole, hard boiled, 1</td>
<td>0.6</td>
</tr>
<tr>
<td>Chicken, breast, meat only, roasted, ½ breast</td>
<td>0.3</td>
</tr>
</tbody>
</table>

**Sources:**

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**DRIs for Vitamin B12 (given as RDA value)**

<table>
<thead>
<tr>
<th>Children</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 yr</td>
<td>9-13 yr</td>
</tr>
<tr>
<td>4-8 yr</td>
<td>≥ 14 yr</td>
</tr>
<tr>
<td>0.9 micrograms</td>
<td>1.8 micrograms</td>
</tr>
<tr>
<td>1.2 micrograms</td>
<td>2.4 micrograms</td>
</tr>
</tbody>
</table>

**Males**

| 9-13 yr | 1.8 micrograms |
| ≥ 14 yr | 2.4 micrograms |

**Females**

| 9-13 yr | 1.8 micrograms |
| ≥ 14 yr | 2.4 micrograms |

<table>
<thead>
<tr>
<th>Pregnant</th>
<th>Nursing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.6 micrograms</td>
<td>2.8 micrograms</td>
</tr>
</tbody>
</table>

Recipe Box - Lazy Lasagna (Serves 12)

This recipe came about one evening when I threw a bunch of different ingredients together in a pan. It tasted so good I began using it during my General Nutrition Workshop where it has been well received. You can use whatever lean ground protein source you like. I have listed the nutritional analysis for lean ground turkey, beef, and soy.

Ingredients:
1 box Whole Wheat Rotini Pasta, cooked
1 jar of Marinara Spaghetti Sauce (can use homemade too)
1 medium Green, Yellow, and Red Bell Pepper, sliced in strips*
1 small Onion, chopped
12 oz Lean Ground Protein (if using meat, cook it first)
1 ½ cups Shredded Part-Skim Mozzarella

Directions:
Preheat oven to 350F. In a large mixing bowl place the first five ingredients and ½ cup cheese. Mix well.
Spray a 13in x 9in pan with nonstick spray. Place the mix in the pan. Sprinkle the remaining cheese on top. Bake for 30 minutes or until cheese is bubbly. Let sit for five minutes then serve. This dish freezes well.

Nutritional Analysis (1/12 recipe):
Turkey: 264 calories; 9g fat; 3g saturated fat; 37mg cholesterol; 373mg sodium; 32g total carbohydrate; 5g dietary fiber; 16g protein; 0.4 micrograms VITAMIN B12
Beef (90% Lean): 263 calories; 9g fat; 4g saturated fat; 34mg cholesterol; 368mg sodium; 32g total carbohydrate; 5g dietary fiber; 17g protein; 1.1 micrograms VITAMIN B12
Soy: 243 calories; 6g fat; 3g saturated fat; 9mg cholesterol; 564mg sodium; 34g total carbohydrate; 6g dietary fiber; 14g protein; 1.2 micrograms VITAMIN B12

*I have also used zucchini, yellow squash, mushrooms, and spinach in place of the peppers.

Vitamin B12 Drug Interactions

These medications can decrease Vitamin B12 absorption:

Anti-acids: Prilosec®, Prevacid®, Tagamet®, Pepcid®, and Zantac

Metformin® (diabetes drug)

Source:
Study Break
Vitamin B12 status and rate of brain volume loss in community-dwelling elderly

This study hit the mainstream media in September 2008 with a variety of headlines including: "Aging: Lack of B12 Linked to Brain Shrinkage" (New York Times) and "Vegetable-only diet ups risk for brain shrinkage" (Fox News). I received several comments and questions from area residents regarding this study. Due to the cost ($20.00/article) most were unable to access the full article. I purchased this article and have it available in the Extension office; however, because of copyright laws it cannot be distributed. If you are interested, please come by and read it. Below is a summary of the article.

Purpose:
To examine the relationship between Vitamin B12 markers and brain volume loss in community-residing older adults over a five year period.

Subjects:
107 community-residing older adults (aged 61-87 years) without cognitive (thinking) impairment at enrollment located in the United Kingdom (UK)

Measures:
Clinical exam, MRI scans, cognitive tests, blood tests (measures of Vitamin B12 status, including two new measures)

Results:
Older adults without dementia with low Vitamin B12 levels within the normal range at the beginning of the study had a higher rate of brain volume loss over the five year study period.

Conclusions (made by researchers):
• Risk factors for brain volume loss: age, high blood pressure, diabetes, high lipids (e.g. cholesterol), high homocysteine levels (formed during Vitamin B12 and Folate breakdown)
• Low Vitamin B12 levels at the study start is an important risk factor for brain volume loss in community-residing older adults
• Blood Vitamin B12 levels may serve as an early marker of brain volume loss and is a changeable risk factor for cognitive decline in older adults

Strengths (as stated by researchers):
• Long follow-up period (5 years)
• Conducted with community-residing older adults
• Using different markers of Vitamin B12 status was better able to assess levels
• Using MRI scans yearly over five years decreased inaccuracies

Weaknesses (as stated by researchers):
• Small sample size
• 41 participants dropped out

Reference:
Anemia  Fatigue
Weakness  Constipation
Loss of Appetite  Weight Loss
Loss of Balance  Depression
Confusion  Dementia
Poor Memory  Soreness of mouth or tongue
Neurological Changes (e.g. numbness, tingling in hands and feet)

* Some of these could be due to other causes as well. It is best to see your health care provider for a diagnosis. DO NOT START TAKING SUPPLEMENTS without first talking to your health care provider.

Source:

Upcoming Programming

**Strong People, Stay Young**- Strength training class. Jan 6 – Feb 26, Tuesdays and Thursdays 12-1 p.m. Rawlins; Class is full; Cost: $20/person (scholarships are available).
If you are interested in receiving information for the next class, please call 328-2647. This class is only available for Carbon County residents due to the frequency of classes. Equipment is supplied through a Carbon County School District #1 Recreation Board Grant and UW Extension.

**Supermarket Savvy**- Two-hour grocery store tour co-sponsored by Valley Foods in Saratoga. The first tour is scheduled Wednesday Jan 28 9am. Class size is limited to 5-7 people. Registration forms are available through the Extension office and Valley Foods. Cost: $5/person (scholarships are available).

**General Nutrition Workshop**- Two and one-half hour workshop available upon request. Requires a minimum of 5 participants. Cost: $10/person; $15/couple (scholarships are available).

**Eat to Your Heart’s Content**- 4 week course (2 hours/week) outlining the foundation of heart healthy nutrition. The course is based on needs and preferences of local residents. Classes will consist of one hour discussion and one hour cooking demonstrations and taste testing. Participants will receive education materials and a cookbook to keep. Cost: $20/person (scholarships are available). Please contact Sarah if you are interested in participating, 328-2647. Supported with grants from the Wyoming Department of Health, the National Extension Association of Family and Consumer Sciences, and UW Extension.
Nutrition Nibbles recently received 1st Place Western Region Newsletter by the National Extension Association of Family and Consumer Sciences. Nutrition Nibbles was created shortly after I joined UW Extension. It was developed as an educational tool that would allow me to reach a large number of residents. During the development phase I had three criteria I wanted Nutrition Nibbles to meet: 1. A clear nutrition and food safety focus; 2. Concise, clear and current articles; and 3. Practical recommendations.

Last year, readers were encouraged to complete a survey evaluating Nutrition Nibbles. Between March and September 2008, 28 readers provided feedback. This feedback has been reviewed and applied to the newsletter including a healthy cookie recipe (Summer 2008), snacking and breakfast (Back-to-School 2008), and diabetes (Nov/Dec 2008). Another request was to change “Kidz Korner” to “Kids Corner,” which is being done with the 2009 issues.

I welcome all constructive feedback and will try to incorporate it especially if it ties in with the above criteria and supports national dietary guidelines and recommendations. I have included the results of the survey for your review. If you haven’t already done so, I encourage you to complete the online Nutrition Nibbles survey (printed ones are available upon request).

**CONTENT ASSESSMENT:**

The information presented in Nutrition Nibbles is easy to understand.

- Strongly Agree (N=18, 64%)
- Agree (N=10, 36%)
- Neutral (N=0)
- Disagree (N=0)
- Strongly Disagree (N=0)

The Nutrition Nibbles content is relevant to my nutrition and food safety needs and interests.

- Strongly Agree (N=14, 50%)
- Agree (N=13, 46%)
- Neutral (N=1, 4%)
- Disagree (N=0)
- Strongly Disagree (N=0)

Do you apply the information/recommendations in Nutrition Nibbles to your daily life?

- Yes (N=23, 82%)
- No (N=5, 18%)

If you answered YES to Question 3, what recommendations have you applied to your daily life?

- “Better nutrition for my family”
- “Increasing my calcium intake, love the recipes”
- “I have watched my meds and [food drug] interactions more careful now”
- “Most of the dietary recommendations have been tried and I found them very positive”
- “I’ve tried the recipes and sent the kids corner to the grandkids”
- “More vegetables and fruit—less pasta and fat, more exercise”
- “They are in the back of my mind and I use them as needed (i.e. recipes, the point on eyes)”
- “Daily vitamins, eat lots of fruits and vegetables and cut down on sugar and white flour”
- “Eat right, exercise, walking, etc.”
- “[I] like [the] recipes”; ‘Cooking healthier, label reading etc”
- “I try to. I’ve tried to eat the foods to be healthier”
- “When buying groceries and planning recipes”
- “Eat fruits, vegetables, fish, etc as recommended. Get exercise and watch weight. Live a healthy lifestyle”
- “Healthy colors in foods. [I] take [the] newsletter to [the] grocery store”
If you answered NO to Question 3, why have you chosen not to apply the recommendations discussed?

I already practice most of the dietary recommendations mentioned. (N=5, 18%)
Other, please specify: “I’d like to improve my diet, but I don’t like fruits, veggies or nuts—help!”

Please rank your interest in the following Nutrition Nibbles features:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Interested</th>
<th>Neutral</th>
<th>Uninterested</th>
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<td>7.1% (2)</td>
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<td>Recommendations/Suggestions</td>
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<td>0% (0)</td>
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<tr>
<td>Kidz Korner*</td>
<td>55.6% (10)</td>
<td>50% (9)</td>
<td>16.7% (3)</td>
<td>18</td>
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</table>

What nutrition and food safety topics would you like to appear in future Nutrition Nibbles?

Information on diabetes (N=3)
Food Storage (dry goods, freezing, refrigerating) (N=3)
“Whatever Sarah thinks would be appropriate information.” (N=1)
Snacking and Breakfast (N=1)
Nutritional ways to work against old age (N=1)
Ideas for small group activities (e.g. contest ideas) (N=1)
Supplements and food that remedy specific health problems (N=1)
Cooking healthy for one (N=1)
Keep up ideas on nutrition, exercise, weight (N=1)
Substituting “fake” eggs for real ones due to cholesterol (N=1)
Gastrointestinal [health] (N=1)

VISUAL APPEAL
Please rank the visual appeal of the Nutrition Nibbles:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Appealing</th>
<th>Okay</th>
<th>Not Appealing</th>
<th>Non-Applicable</th>
<th>Responses</th>
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<td>Pictures</td>
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<td>0% (0)</td>
<td>28</td>
</tr>
</tbody>
</table>

DEMOGRAPHICS:
Carbon  18  Albany  10

Age Group:
> 55 years   21  45-54 years  04  35-44 years  02  25-34 years  00
18-24 years  01

Gender:
Male  04  Female  24

* Kids Corner will remain a regular component of Nutrition Nibbles even though some expressed disinterest. I believe it is important to provide information that is targeted towards youth as a means to peak their interest in good health habits. Also, some adults have told me it helps reinforce information they already know, but may not always apply to their daily lives.
It is important to get Vitamin B12 from the food you eat. It helps the cells in your body to stay active and to keep working normally. Vitamin B12 is found in foods like poultry, fish, beef & milk.

**Kids Corner**

By: Cathleen Craig, BS

**FUN FACT**

**Beef, Uncle Sam and the U.S.**

During the War of 1812, a New York meatpacker, Sam Wilson, got a contract to supply beef to the Army. Wilson, who was known locally as “Uncle Sam,” shipped the salted meat in barrels. The barrels were labeled “U.S.” because they belonged to the U.S. government. The teamsters and soldiers joked that the barrels were the initials of Uncle Sam himself. Later, anything marked with U.S. (as much Army property was) also became linked with the name Uncle Sam and led to the idea that Uncle Sam symbolized the Federal Government.

http://www.beeffrompasturetoplate.org/beeftrivia.aspx

**Kitchen Cupboard**

**Safety Tips**

- Wash your hands before you start cooking to keep the germs from getting into your food and making you sick!
- Use pot holders or oven mitts when handling pots & pans that have been heated by the stove, oven, and even the microwave.

**Cooking Terms**

- **Marinate** - to soak food in a seasoned liquid to tenderize and add flavor
- **Broil** - to cook food with dry heat at extremely high temperatures with direct heat coming from above

**Kitchen Utensils**

- **Skewer** - Thin metal or wooden stick used to hold small pieces of food together. Used for grilling or roasting food.
- **Broiler Pan** - has two pieces: a slotted upper pan and a deeper, solid lower pan (drip pan). It allows the fat and grease to drip away from the meat.

**Q- What do you call a cow lying on the ground?**

**A- Ground Beef**

**Q- What’s another name for a cowhand?**

**A- Hamburger Helper**
Holy Cow!!...

• Before cows can digest their food, they spit back up the already chewed food and chew on it again, this is called "chewing their cud."

• Cows have 32 teeth and a tough pad of skin instead of teeth on the top front of their jaw.

• The stomach of the cow has 4 compartments.

• The average American eats about 64 pounds of beef each year, more than the people of any other country in the world.

Ingredients:
1 pound lean beef (round or sirloin steak work well), a variety of vegetables & fruit (bell peppers, mushrooms, tomatoes, pineapple, apple), Italian dressing (or your favorite non-creamy dressing)

Supplies: Knife, Cutting Board, Skewars, Broiler Pan, Oven, bowl or bag to mix dressing with meat

Directions: With the help of an adult: Cut lean beef into 1 inch cubes. Mix beef in a bowl or bag with salad dressing, marinate for 1/2 hour (if desired). Cut vegetables and fruit. Turn oven on to broil. Alternate putting the beef, vegetables, & fruit onto the skewers. Place on broiling pan & put in oven. The time for cooking will vary depending on how pink or well done you like your meat (10-15 min). Beware! you could get sick if the meat isn’t cooked to a minimum of 145 degrees Farenheit. Insert a meat thermometer into the thickest part of the meat to test the temperature.
CENT$IBLE NUTRITION PROGRAM

Free nutrition classes for those who qualify. Classes are tailored to meet the participants’ needs and wants

Duration:
Classes meet weekly (1-2 hours) for 5-14 weeks

Incentives:
1. A free computer diet analysis
2. Cookbook
3. Nutrition and cooking lessons adapted to your needs.

The Cent$ible Nutrition Program empowers individuals and families to select foods that fit within their budget, and are nutritionally sound choices.

FOR MORE INFORMATION OR TO ASK ABOUT CLASS TIMES CALL:
328-2642 (Carbon County) or 721-2571 (Albany County)