

Gluten in Medications & Heart Health

Special guest:

Steve Plogsted



PharmD, BCNSP, CNSC

Janelle Smith

CDF Registered Dietitian Nutritionist

February 11, 2015


12 pm PST



Celiac Disease FOUNDATION

Ask THE DIETITIAN
Janelle Smith | Registered Dietitian Nutritionist

GET ANSWERS!


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Today's Webinar

- Gluten in Medications with Steve Plogsted, PharmD
- Heart conditions in Celiac Disease
- Taking care of your heart

Steve Plogsted, PharmD, BCNSP, CNSC

- Clinical pharmacist at Nationwide Children's Hospital in Cleveland, OH
- Involved in celiac disease since 1995, providing expert advice on gluten in medications
- Glutenfreedrugs.com



MEDICATIONS AND GLUTEN

Steve Plogsted, PharmD, BCNSP, CNSC

⦿ Excipients can be obtained *from any starch source*, but are primarily derived from:

- Corn
- Potato
- Tapioca



⦿ However, they have also been known to contain starch from wheat

Frequently Used Excipients

The following are the most commonly used excipients in U.S.-manufactured drug products:

Magnesium Stearate >2500	Povidone
Lactose >2000	Pregelatinized Starch
Microcrystalline Cellulose >1500	Hydroxypropyl Methylcellulose
Starch (corn)	Coatings and Ink
Silicone Dioxide	Croscarmellose
Titanium Dioxide	Hydroxypropyl Cellulose >250
Stearic Acid	Ethycellulose
Sod Starch Glycolate	Calcium Phosphate
Gelatin	Crospovidine
Talc	Shellac (and Glaze)
Sucrose	Calcium Stearate

Starch

- ⦿ US FDA regulations state that any product (used in drug manufacturing) labeled as starch can be derived from any source
- ⦿ Food starch is derived from corn only

Pregelatinized Starch

- A starch that has been chemically or mechanically processed. The starch can come from corn, wheat, potato or tapioca. Pregelatinized starch is a processed carbohydrate, used as a texturizer and/or binder. It is typically derived from corn, waxy corn, potato, or tapioca. It has nothing to do with gelatin. It is safe for vegetarians and vegans.

Sodium Starch Glycolate

- Sodium salt of carboxymethyl ether of starch. Usually from potato but can be from corn, wheat or rice.

Labeling Search

Sept. 2008

- ◎ 4016 package inserts
- ◎ 1320 (33%) had “starch” as an ingredient
 - 399 pregelatinized starch
 - 53 pregelatinized starch (corn)
 - 383 corn (maize) starch
 - 141 starch
 - 8 potato starch
 - 3 wheat starch
 - 324 sodium starch glycolate

Maltodextrin-Wheat

(from the Glutenfree Dietitian Tricia Thompson)

- ⦿ Wheat starch is not wheat grain and is not wheat protein
- ⦿ Wheat starch hydrolysates (ie, maltodextrin and glucose syrups) have been tested to be below 20 PPM
- ⦿ Benefiber, which contains wheat dextrin, has been tested by the Gluten Free Watchdog organization and is considered safe for celiacs

Clan Thompson

- Mannitol: Gluten free: Yes. Vegetarian: Yes. Comments: Commercially produced by the electrolytic reduction or transition of sugar solutions or by fermentation of sugars. Can be produced from maltose. Although maltose is derived from barley - mannitol is refined so no protein remains in the final product.

Polyols/Sugar Alcohols

- Sugar alcohols or polyols, as they are also called, have a long history of use in a wide variety of foods
- Sugar alcohols are neither sugars nor alcohols. They are carbohydrates with a chemical structure that partially resembles sugar and partially resembles alcohol, but they don't contain ethanol as alcoholic beverages do.

- The polyols commonly used include sorbitol, mannitol, xylitol, maltitol, maltitol syrup, lactitol, erythritol, isomalt and hydrogenated starch hydrolysates
- Sugar alcohols occur naturally in a wide variety of fruits and vegetables, but are commercially produced from other carbohydrates such as sucrose, glucose, and starch.

Other Sources-The Drug Itself?

- ⦿ Olmesartan (Benicar)
- ⦿ Report of gluten like enteropath
- ⦿ 22 patients reported (Mayo Clinic)
- ⦿ Biopsies demonstrated villous atrophy and varying degrees of inflammation
- ⦿ tTG antibodies were normal

Benicar® (olmesartan)

- Mayo Clinic reported on 22 patients taking the drug long term who developed severe celiac symptoms and intestinal changes that mimicked celiac disease
- The drug contained the following fillers:
 - hydroxypropyl cellulose, hypromellose, lactose monohydrate, low-substituted hydroxypropyl cellulose, magnesium stearate, microcrystalline cellulose, talc, titanium dioxide, and (5 mg only) yellow iron oxide.

What about injectable drugs

- ⦿ Generally not a problem
- ⦿ Minimal excipients
- ⦿ Not ingested

Sources of Information

- ⦿ Pharmaceutical manufacturer's drug information department
- ⦿ Package insert
- ⦿ Drug company web site
- ⦿ Internet web sites
- ⦿ Chat rooms/Blogs
- ⦿ Your local pharmacist?
 - Besides asking the pharmacist about the gluten status don't forget to ask if the drug itself will cause intestinal issues

Internet Resources

- ◉ Glutenfree Drugs
<http://www.glutenfreedrugs.com>
- ◉ Celiac Sprue - A Guide Through the Medicine Cabinet, by Marcia Milazzo,
<http://www.celiacmeds.com>
- ◉ Wheaton Gluten Free Support Group
<http://homepage.mac.com/sholland/ceciac/GFmedlist.pdf>
- ◉ DailyMed - Provides high quality information about marketed drugs (US)
<http://dailymed.nlm.nih.gov/dailymed/about.cfm>
- ◉ Pillbox – Provides a way to search by ingredient
<http://pillbox.nlm.nih.gov/>

NIH/NLM Pillbox Website

- Starch-8739 records
- Corn-6518 records
- Sodium Starch Glycolate-3207 records
- Potato-2934 records
- Maltodextrin-844 records
- Lactose-7955 records
- Soy-368 records
- Wheat-11 records

Identify or Search for a Pill

Imprint:
 Pill does not have an imprint.

Shape:

Color:

Size:

Score: Unknown 1 2 3 4

Drug Name or Ingredient(s):

Inactive Ingredient(s):
 Find pills WITHOUT this ingredient.

Label Author:

DEA Schedule:

Product Code: -

Do not search repackaged and relabeled medications

Search Results: 11 record(s) for "wheat".



Name: Tekturna HCT (aliskiren 150 MG / HCTZ 12.5 MG) Oral Tablet

Ingredient(s): Aliskiren mixture with Hydrochlorothiazide

Imprint: NVR;LCI

Label Author: Novartis Pharmaceuticals Corporation

[Show More Information](#)

[Drug Label](#)

[Drug Information Links](#)



Name: Tekturna HCT (aliskiren 300 MG / HCTZ 12.5 MG) Oral Tablet

Ingredient(s): Aliskiren mixture with Hydrochlorothiazide

Imprint: NVR;CVI

Label Author: Novartis Pharmaceuticals Corporation

[Show More Information](#)

[Drug Label](#)

[Drug Information Links](#)



Name: Grifulvin V 500 MG Oral Tablet

Ingredient(s): Griseofulvin

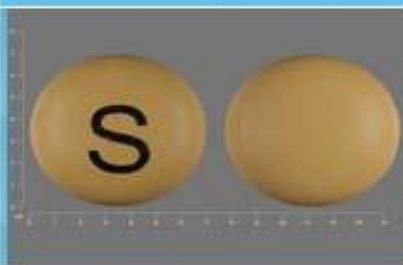
Imprint: ORTHO;214

Label Author: Ortho-McNeil Pharmaceuticals

[Show More Information](#)

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Name: Sanctura 20 MG Oral Tablet

Ingredient(s): Trospium

Imprint: S

Label Author: Allergan, Inc.

[Show More Information](#)

[Drug Label](#)

[Drug Information Links](#)



Search Results: 1 record(s) for "Wheat | 0078-0521".



Name: Tekturna HCT (aliskiren 150 MG / HCTZ 12.5 MG) Oral Tablet

Ingredient(s): Aliskiren mixture with Hydrochlorothiazide

Imprint: NVR;LCI

Label Author: Novartis Pharmaceuticals Corporation

[Hide More Information](#)

[Drug Label](#)

[Drug Information Links](#)

Color(s): White

Shape: Oval

Size (mm): 15.00

Score: 1

Inactive Ingredient(s): silicon dioxide / crospovidone / hypromelloses / ferric oxide red / lactose / magnesium stearate / cellulose, microcrystalline / polyethylene glycols / povidone / talc / titanium dioxide / starch, wheat

DEA Schedule: Non-scheduled

Product Code: 0078-0521

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Data updated: November 4, 2013



Contacting the Drug Manufacturer

- ◎ Ask specific questions
 - Does the medication contain any gluten
 - Does the drug contain any starch
 - Is there any special coating

Heart Health



What heart conditions are related to celiac disease?

- Arrhythmias
- Ischemic heart disease
- Idiopathic dilated cardiomyopathy – 5.7% risk in those with CD

And now..... coronary artery disease

Risk of CAD in Celiac Disease

2014 study: “Celiac disease linked to almost doubled risk of CAD”. Medscape. Mar 29, 2014

Age	CAD prevalence in CD (n=24,530)	CAD prevalence without CD (n=22.35 million)
All ages 18+	9.5	5.6
>65 yo	28.6	13.2
18-65 yo	4.5	2.4

- Risk of stroke 1.4 times higher

Theory

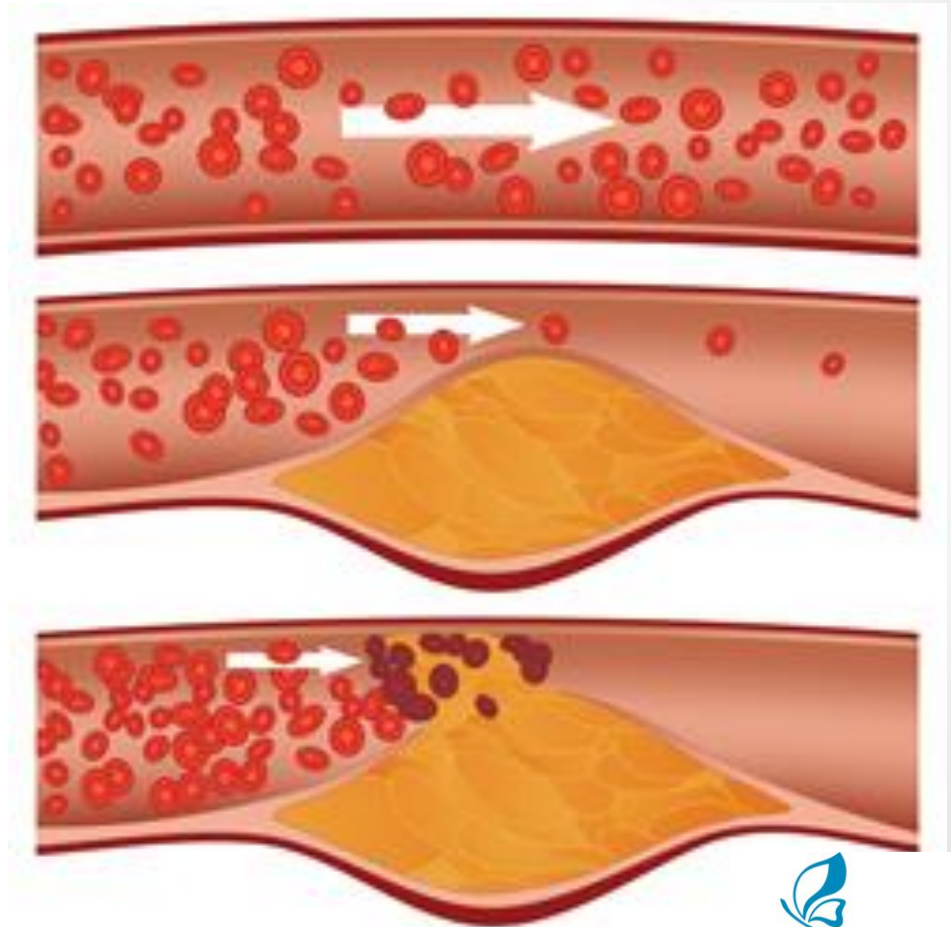
“People with celiac disease have some **persistent low-grade inflammation** in the gut that can **spill immune mediators into the bloodstream**, which can then accelerate the process of atherosclerosis and, in turn, CAD”

Risk also seen in “other inflammatory states like lupus erythematosus, rheumatoid arthritis, and inflammatory bowel disease”

– Dr. Rama Dilip Gajulapalli, Cleveland Clinic, OH

Atherosclerosis & CAD

- Inflammatory cells circulating through the blood stream can damage walls
- Healing process hardens, creates plaque
- Can burst, form blood clot and block blood flow
-



Protecting your Heart

Follow the gluten-free diet if you have CD!

- Minimal gluten intake may perpetuate low-level chronic inflammation....?
- Degree of villous atrophy seems to be unrelated to risk of heart disease

Lebwohl B, Emilsson L, Frobert O, Einstein AJ, Green PH, Ludvigsson JF. **Mucosal healing and the risk of ischemic heart disease or atrial fibrillation in patients with celiac disease; a population-based study.** PLoS One. 2015 Jan 30; 10(1):e0117529.

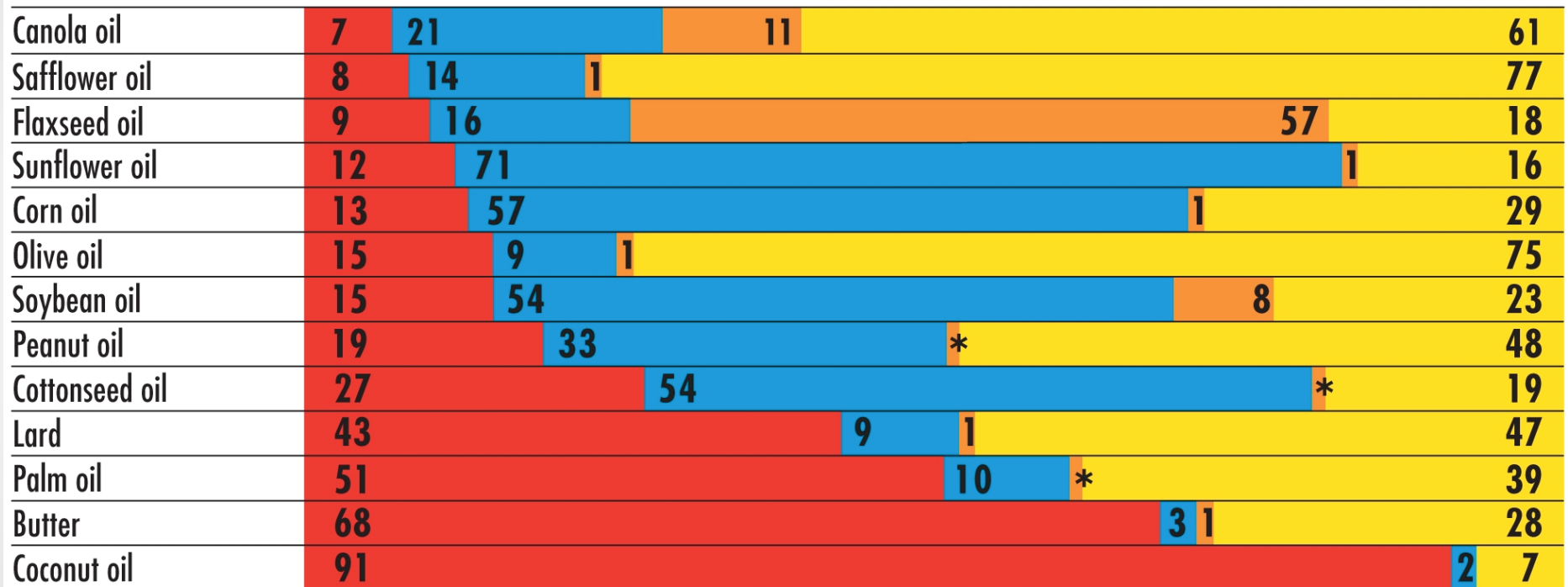
Heart-Protective Diet

Balance omega-3's with omega-6's

- Polyunsaturated fatty acids found in both plant and animal sources
- Omega-6's are more common in US diet:
 - Vegetable oil, butter, lard

Fatty acid content of different fat sources

DIETARY FAT



SATURATED FAT



POLYUNSATURATED FAT



linoleic acid
(an omega-6 fatty acid)



alpha-linolenic acid
(an omega-3 fatty acid)

MONOUNSATURATED FAT



oleic acid
(an



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SOURCE: POS PILOT PLANT CORPORATION

Heart-Protective Diet

- Omega-6 fatty acids are precursors to inflammatory response
- Eating enough omega-3's may slow down/limit the inflammation response to life

Sources of Omega-3 fatty acids:

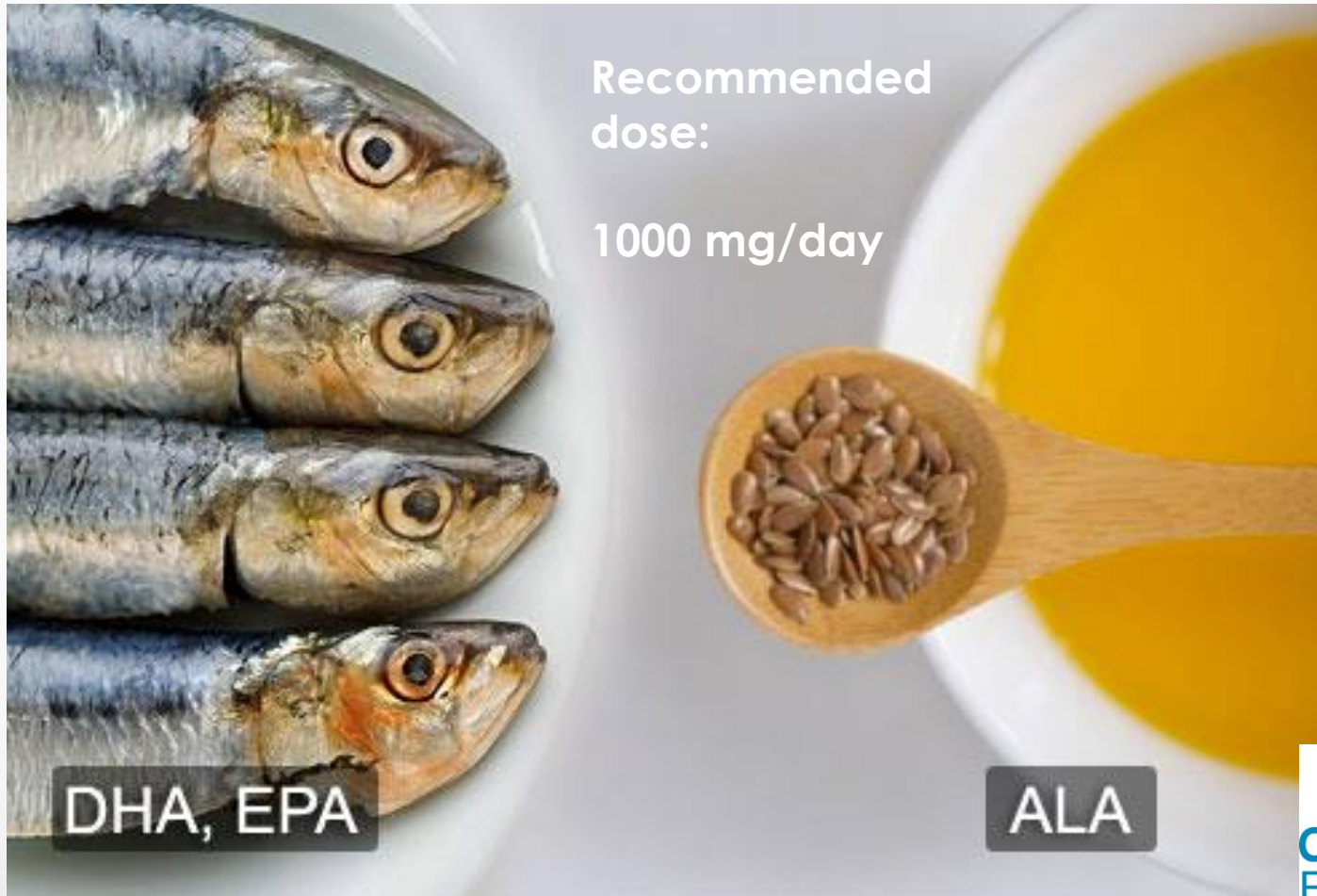
- **Fish oil**
- Flaxseed
- Walnuts
- Soybeans
- Canola oil
-



Benefits of Omega-3's

- Lower blood triglycerides (another risk factor for heart disease)
- Improve brain health:
 - for growing infants and children
 - for the aging – dementia, Alzheimer's
- Mental health and depression
- Decrease inflammation in autoimmune diseases?

Fish oil is utilized better than vegetable oils



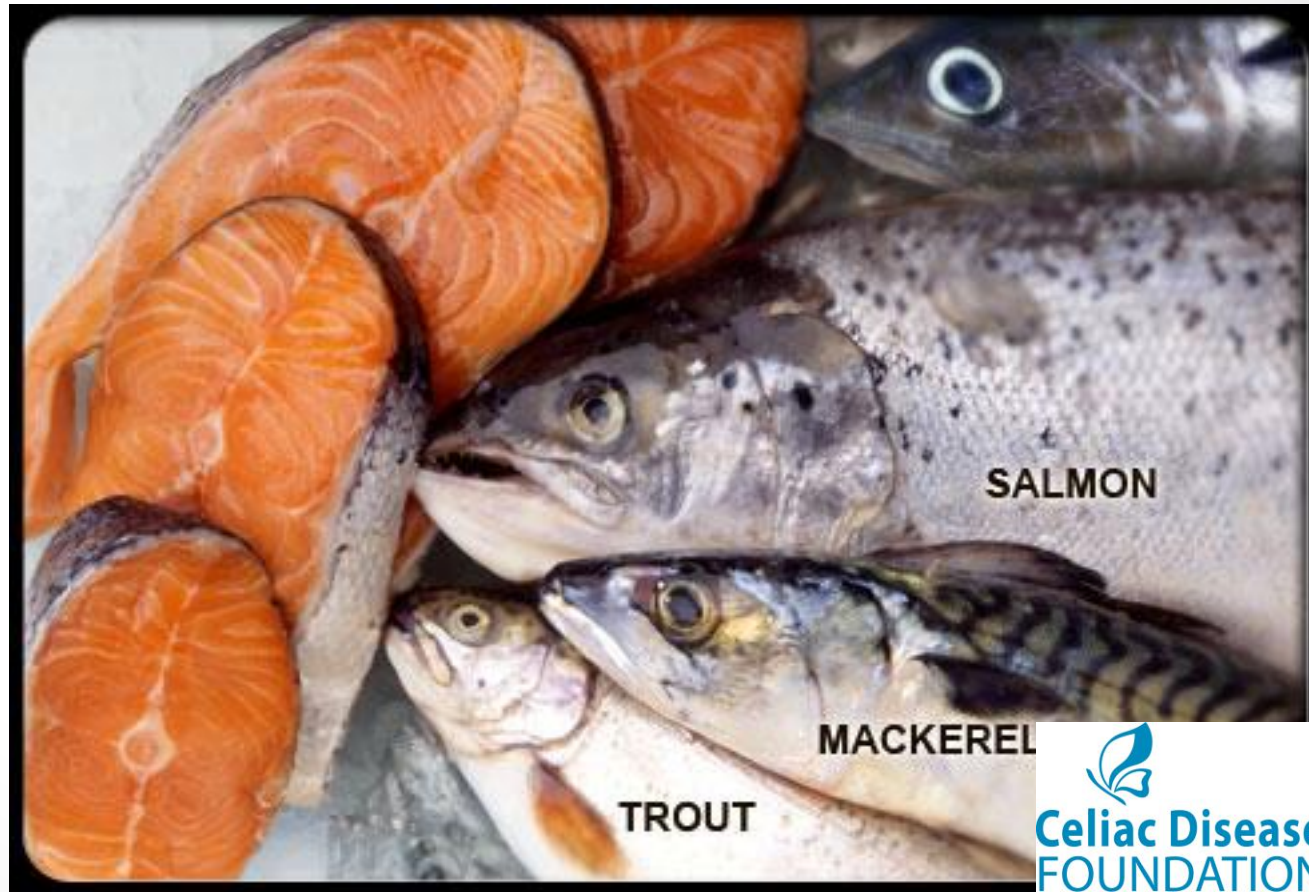
Meatless Mondays & Fatty Fish Fridays

- Help you to get more plant and fish sources of fatty acids
- By default, decrease ratio of animal and omega-6 fatty acids
- Decrease dietary cholesterol and saturated fat
- Increase phytosterols – plant “cholesterol” – that block absorption of dietary cholesterol

Sun	Mon	Tues	Wed	Thur	Fri	Sat
	×				×	

Fatty Fish

- Salmon (wild is higher in omega-3's)
- Anchovies
- Bluefish
- Herring
- Mackerel
- Sardines
- Sturgeon
- Lake trout
- Tuna



More on plants and antioxidants

- Get 7 servings/day of fruits and vegetables
- Neutralize free radicals that would roam the body and damage cardiovascular system



Limit Sodium & Simple Sugars

- Sugar intake known to increase triglycerides and disrupt LDL/HDL balance
- Excess salt contributes to high blood pressure
- Choose whole foods over packaged foods
- Cook at home more than eating out



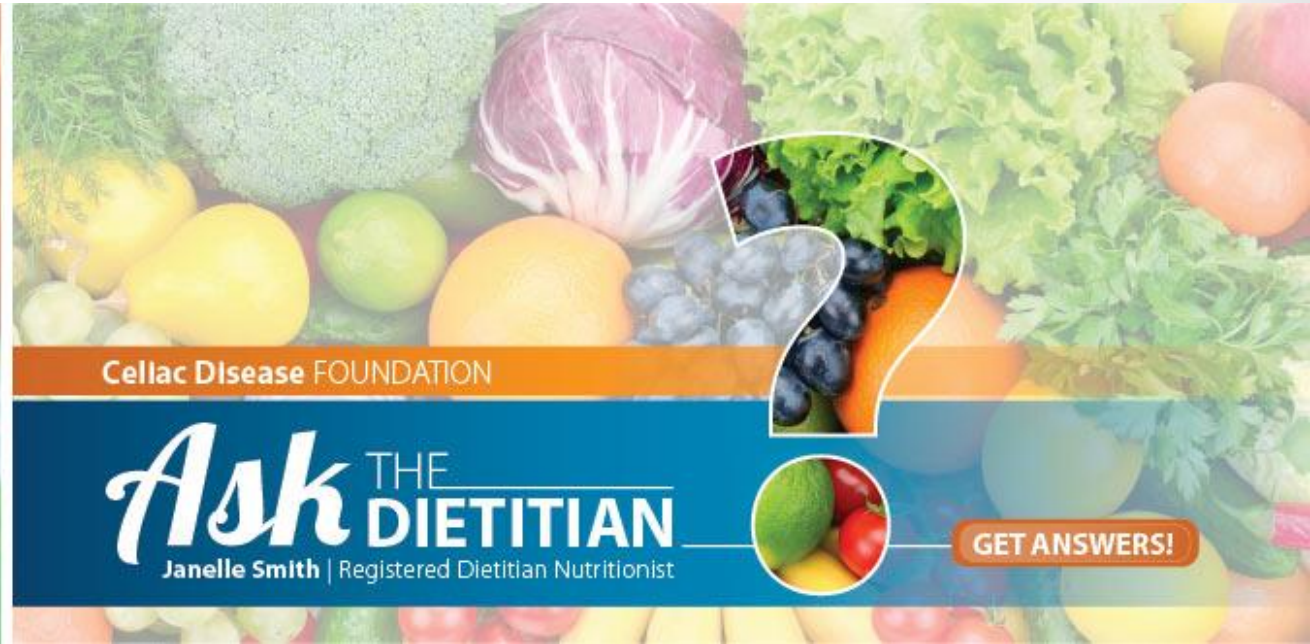
Physical Activity

- Take a walk on your lunch break
- Stand up at work and stretch 10 minutes/day
- If you're already active: balance your type of activity
- Incorporate yoga and stretching



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Next CDF Ask the Dietitian Webinar:

To be announced