Welcome to the webinar!

Culinary Recovery: Practical Solutions to Feed Success

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- Please submit questions for our presenter throughout the presentation using the questions tab. Questions will be addressed during a Q&A session at the end.
- The webinar will be recorded -- a link to the recording will be e-mailed to you before the end of the day Friday. The recorded webinar will be available at www.HumanKinetics.com/Webinars.
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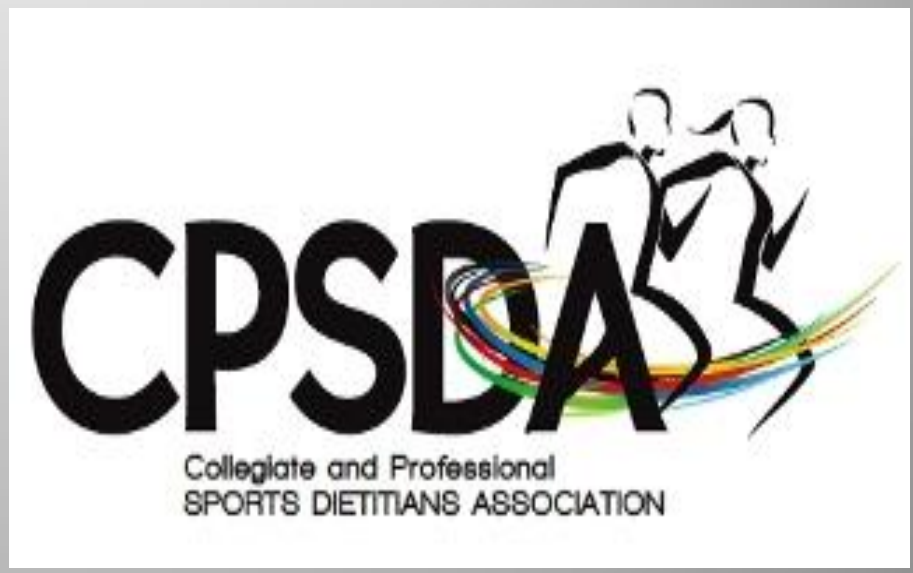
Culinary Recovery:

Practical solutions to feed success

Presented By:
Chef Todd Seyfarth MS RD CSSD

Special thanks!



About the Presenter:

- Chef Todd Seyfarth MS RD CSSD
  - Chef Instructor at Johnson & Wales University, Providence
  - Culinary Nutrition Department Chair /Program Director

- Academic Focus:
  - *Appropriate, evidence based menu development, informed by current research and practice.*

Presentation Objective

- Brief overview of acute inflammation
- Basics of Recipe Development / Modification
- How to incorporate more anti-inflammatory foods into your food service delivery.

Acute Inflammation

- A natural and necessary response.
- Poor management of inflammation may prolong recovery.
- Diet is **one** component of inflammation management/treatment, and should be used in conjunction with other therapies.

Big Picture….

- Increase the amount and variety of fruits and vegetables.
  - Regardless of evidence supporting data.
- Monitor type and amount of fat/oil/lipid intake.
- Monitor added sugar intake.

Supplements vs. Food

- Most findings showed whole-food options (assessed epidemiologically) were usually better than supplement sources. [1] [2]
  - Supplements were more often than not done ex vivo, in vitro, or via animal studies.
- Long-term diet and behavioral changes showed the best results.

Positions of the National Athletic Trainers' Association

- *Proper nutrition and changes in the athlete's habitual diet should be considered first when improved performance is the goal.*

- *The keys to good health and successful athletic performance are a carefully designed, healthful, and nutritionally balanced diet and well-developed training program; there is no "quick fix" or shortcut to success.[3*]

Potential Issues

- Some studies showed increased mortality, in high risk groups, for Vitamin A, Bata-carotene, and vitamin E.

- Meta-analysis from 2012 showed:
  - "…no evidence to support antioxidant supplements for primary or secondary prevention. Beta-carotene and vitamin E seem to increase mortality, and so may higher doses of vitamin A. Antioxidant supplements need to be considered as medicinal products and should undergo sufficient evaluation before marketing." [4]

As a reminder…

- Free radicals come in many shapes, sizes, and chemical configurations.
- There are hundreds of different substances that can act as antioxidants.
- Antioxidants are really just “things” to act as an electron donor.
  - Some substances that act as antioxidants in one situation may be pro-oxidants in others.
  - Mega-dosing (supplements) may be detrimental
    - Many OTC supplements do not have supporting research showing efficacy.

How do you rate anti-oxidant content?

- TAC
  - Total antioxidant capacity
- *ORAC*
  - *Oxygen radical absorbance capacity*

  - PLUS
    - *Ferric reducing-antioxidant power (FRAP)*
    - *Total radical-trapping antioxidant parameter (TRAP)*
    - *Trolox equivalent antioxidant capacity (TEAC)*
    - Antiradical screening by thin layer chromatography (TLC)
    - Cellular antioxidant activity (CAA) assay
    - Cupric Ion Reducing antioxidant capacity (CUPRAC)

None are really great values, but give us something to work with….

Often criticized because their concentrations don't always translate into improved results due to supplementation. [5]

Supplements vs. Food

- Before we get started:

*The ingredients that are highlighted in this presentation **SHOULD NOT** be consumed to the exclusion of other foods…*

  - but rather incorporated in ADDITION to other fruits and vegetables!!!

Ingredients with good supporting evidence: [6]

Table 1. Comparison of values in the USDA ORAC database per µmol TE/100g and µmol TE/typical serving

ORAC Database Foods ranked per 100g basis	µmol TE/100g	ORAC Database Foods ranked per typical serving		µmol TE/100g
Spices, cloves, ground	314446	Baking chocolate, unsweetened	1 square (29)	14479
Spices, cinnamon, ground	267536	Elderberries, raw	1/2 cup (72.5)	10655
Spices, oregano, dried	200129	Apples, Red Delicious, raw. with skin	1 med (182)	7781
Spices, turmeric, ground	159277	Apples, Granny Smith, raw, with skin	1 med (182)	7094
Cocoa, dry powder, unsweetened	80933	Juice, Pomegranate, 100%	1 cup (253)	5923
Spices, cumin seed	76800	Candies, chocolate, dark	1 oz (28.35)	5903
Spices, parsley, dried	74349	Plums, dried (prunes), uncooked	1/2 cup (87)	5700
Spices, basil, dried	67553	Alcoholic beverage, wine, table, red	5 fl oz. (147)	5693
Baking chocolate, unsweetened	49926	Artichokes, boiled	1/2 med (60)	5650
Spices, curry powder	48504	Apples, raw, with skin	1 med (182)	5609
Chocolate, dutched powder	40200	Cranberries, raw	1/2 cup (55)	5271
Sage, fresh	32004	Pears, raw	1 med (178)	5235
Spices, mustard seed, yellow	29257	Prune juice, canned	1 cup (256)	5212
Spices, ginger, ground	28811	Apples, Gala, raw, with skin	1 med (182)	5147
Spices, pepper, black	27618	Candies, semisweet chocolate	1 oz (28.35)	5118
Thyme, fresh	27426	Nuts, pecans	1 oz (28.35)	5086
Marjoram, fresh	27297	Plums, black diamond, with peel, raw	1 fruit (66)	5003
Spices, chili powder	23636	Apples, Golden Delicious, raw, with skin	1 med (182)	4859
Candies, chocolate, dark	20823	Blueberries, raw	1/2 cup (74)	4848
Candies, semisweet chocolate	18053	Apples, Red Delicious, raw, without skin	1 med (161)	4727

FRAP(Total Redox)* per Typical Serving		ORAC** per Typical Serving	
Food	**Serving Size**	**Food**	**Serving Size**
Walnuts, English	1 oz (28.35g)	Baking chocolate, unsweetened, squares	1 square (28.35)
Blackberries	1/2 cup (72 g)	Apples, Red Delicious, raw. with skin	1 med (182)
Nuts, pecans	1 oz (28.35g)	Plums, dried (prunes), uncooked	1/2 cup (87)
Artichokes, boiled	1/2 med. (60g)	Apples, Granny Smith, raw, with skin	1 med (182)
Baking chocolate, unsweetened, squares	1 oz (28.35g	Candies, chocolate, dark	1 oz (28.35)
Pineapple juice	1 cup (240g)	Artichokes, boiled	1/2 med (60)
Cranberries, raw	1/2 cup (55g)	Cranberries, raw	1/2 cup (55)
Strawberries	1/2 cup (88g)	Apples, Gala, raw, with skin	1 med (182)
Plums, dried (prunes), uncooked	1/2 cup (87g)	Nuts, pecans	1 oz (28.35)
Orange juice	1 cup (240g)	Plums, black	1 fruit (66)
Apple juice	1 cup (240g)	Apples, Golden Delicious, raw, with skin	1 med (182)
Raspberries	1/2 cup (61.5)	Apples, Red Delicious, raw, without skin	1 med (161)
Blueberries	1/2 cup (74g)	Apples, Fuji, raw, with skin	1 med (182)
Plums, black	1 fruit (66)	Blueberries, raw	1/2 cup (74)
Candies, chocolate, dark	1 oz (28.35g	Plums, raw	1 fruit (66)
Cabbage, red, cooked	1/2 cup (75g)	Blackberries, raw	1/2 cup (72)
Peppers, red, cooked	1/2 cup (70g)	Walnuts, English	1 oz (28.35)
Spinach, frozen uncooked	1/2 cup (78g)	Apples, Golden Delicious, raw, without skin	1 med (161)
Kiwi fruit	1 fruit (76g)	Pears, green cultivar	1 med (178)
Sweet Potato, baked	1 med. (114g)	Figs, raw	2 med (100)

Table 3. Comparison of similar foods (different samples) analyzed by ORAC assay in two different laboratories

Food Description	Ou et al. 2002	Wu et al. 2004
	µmol TE/100g FW	µmol TE/100g FW
Beet, raw	1369	2774
Onions, red, raw	1759	1146
Spinach, raw	1520	2640
Broccoli, raw	1159	1590
Peppers, green, raw	816	558
Cauliflower, raw	765	647
Peppers, red, raw	757	901
Bean, snap, raw	569	290
Carrots, raw	678	1215
Cabbage, raw	531	1359
Tomato, raw	342	337

HOWEVER:

- *Participants had a 13- to 15-percent increase in the antioxidant power of their blood after **doubling their daily fruit and vegetable intake**, regardless of ORAC scores of the fruits and vegetables [7].*

Fruits	
Prunes	5770
Raisins	2830
Blueberries	2400
Blackberries	2036
Strawberries	1540
Raspberries	1220
Plums	949
Oranges	750
Red grapes	739
Cherries	670
Kiwi fruit	602
Grapefruit, pink	483

Vegetables	
Kale	1770
Spinach	1260
Brussels sprouts	980
Alfalfa sprouts	930
Broccoli flowers	890
Beets	840
Red bell pepper	710
Onion	450
Corn	400
Eggplant	390

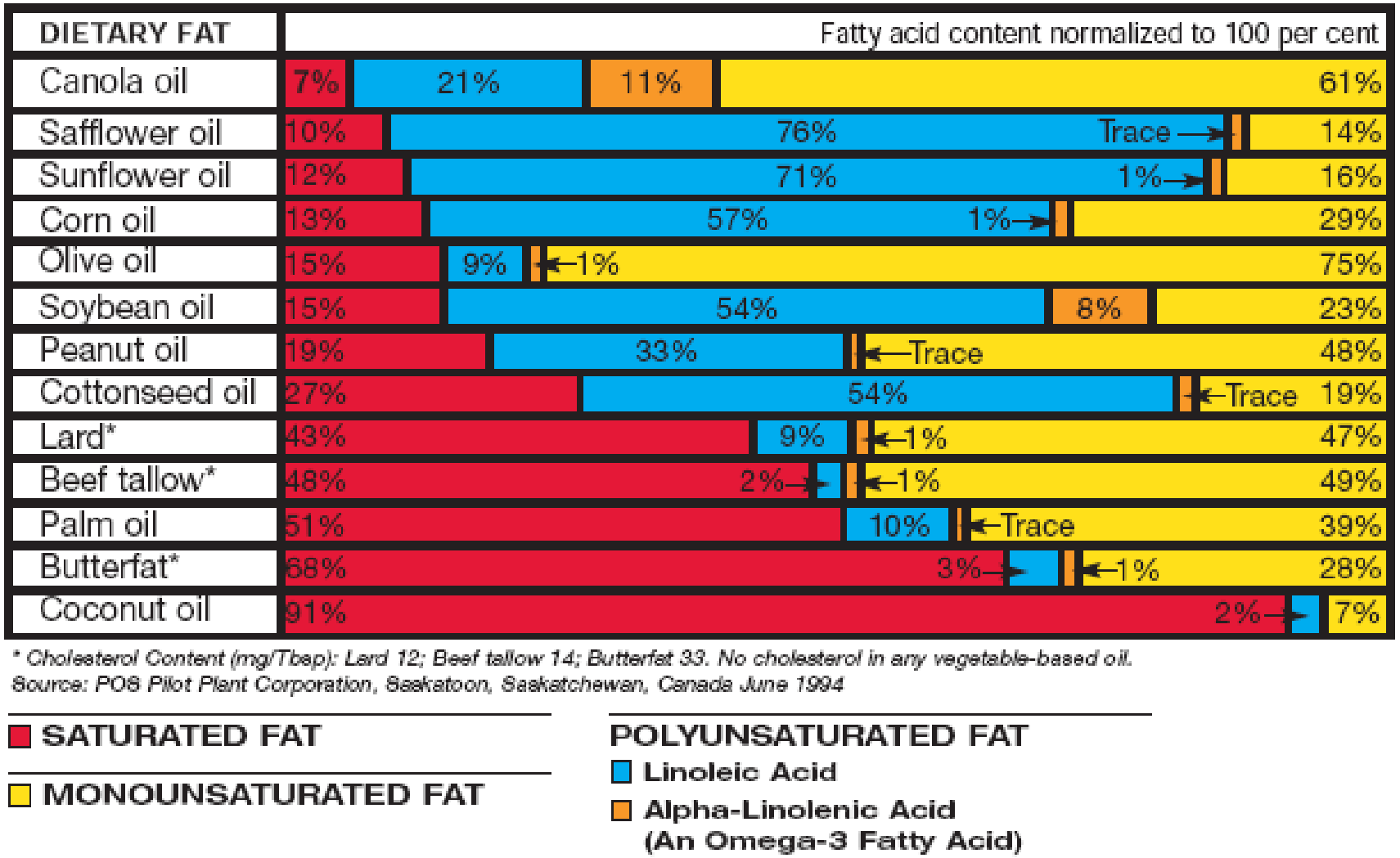
Top-Scoring Fruits & Vegetables
ORAC units per 100 grams (about 3 ½ ounces)

http://www.ars.usda.gov/is/pr/1999/990208.htm

Ingredients with possible PRO INFLAMMATION response.

- High omega 6 fats & low in Omega 3
  - Focus on dietary DHA & EPA Omega 3
    - ALA omega 3 (eg. flax) has a poor conversion
      - Diets rich in zinc, iron and pyridoxine may help.
  - Possibly Limit Omega 6
    - Epically Arachidonic Acid (AA)
      - However, AA can be made from linoleic acid (LA)
        - » Another Omega 6 FA. [8]
- Sugars
  - *We will get more into this in a minute…*

Know Your Fats [9]



Modifying fat intake:

- **"Displace"** Omega 6 FAs with Monounsaturated (MUFA)
  - Avocado
  - Canola
  - Olive
  - Peanut

- Deep frying… (*if you have to)
  - Use Peanut and Canola
    - Peanut oil likely does not contain allergens [10]
      - http://www.peanut-institute.org/eating-well/allergy/peanut-oil-no-allergens.asp
  - Clean frequently & Do not leave on when not in use!

- Serve fish high in fats
  - White fish tent to store fats in their livers
  - **May need Supplement fish, krill or algae oils*

Best Food Sources of Omega 3 [11]

Best Food Source of omega 3 FAs
Herring, sardines
Mackerel: Spanish/Atlantic/Pacific
Salmon
Halibut
Tuna
Swordfish
Tuna (canned, light)

What about Low-carb athletes?

- Some evidence showing reduced bio-markers for inflammation for fat adaptive diets.
  - However, the arguments are usually framed as:

Why we should say, “Sugar” and not Carbs, when talking about inflammation

- Research is showing increased free radical production when “Complex I” is favored on the E.T.C. [12]

- NADH+ : FADH2 Ratios from breakdown and metabolism
  - Glucose:
    - 5:1
  - *Palmitic acid
    - 2:1

- Burning CHO = May Increase Free Radical Production!!!

**The most common FA in animals & is the first fatty acid produced during fatty acid synthesis and the precursor to longer fatty acids.*

Why we should say, “Sugar” and not Carbs.

- Throughout the entire human/mammalian evolutionary history, the vast majority of Carbohydrate sources came packaged with Antioxidants!!! [13]

AND

- Fat adaptations are NOT easy to achieve

Even more reason to follow the USOC's "My plates"

http://www.teamusa.org/About-the-USOC/Athlete-Development/Sport-Performance/Nutrition/Resources-and-Fact-Sheets

Culinary Solutions

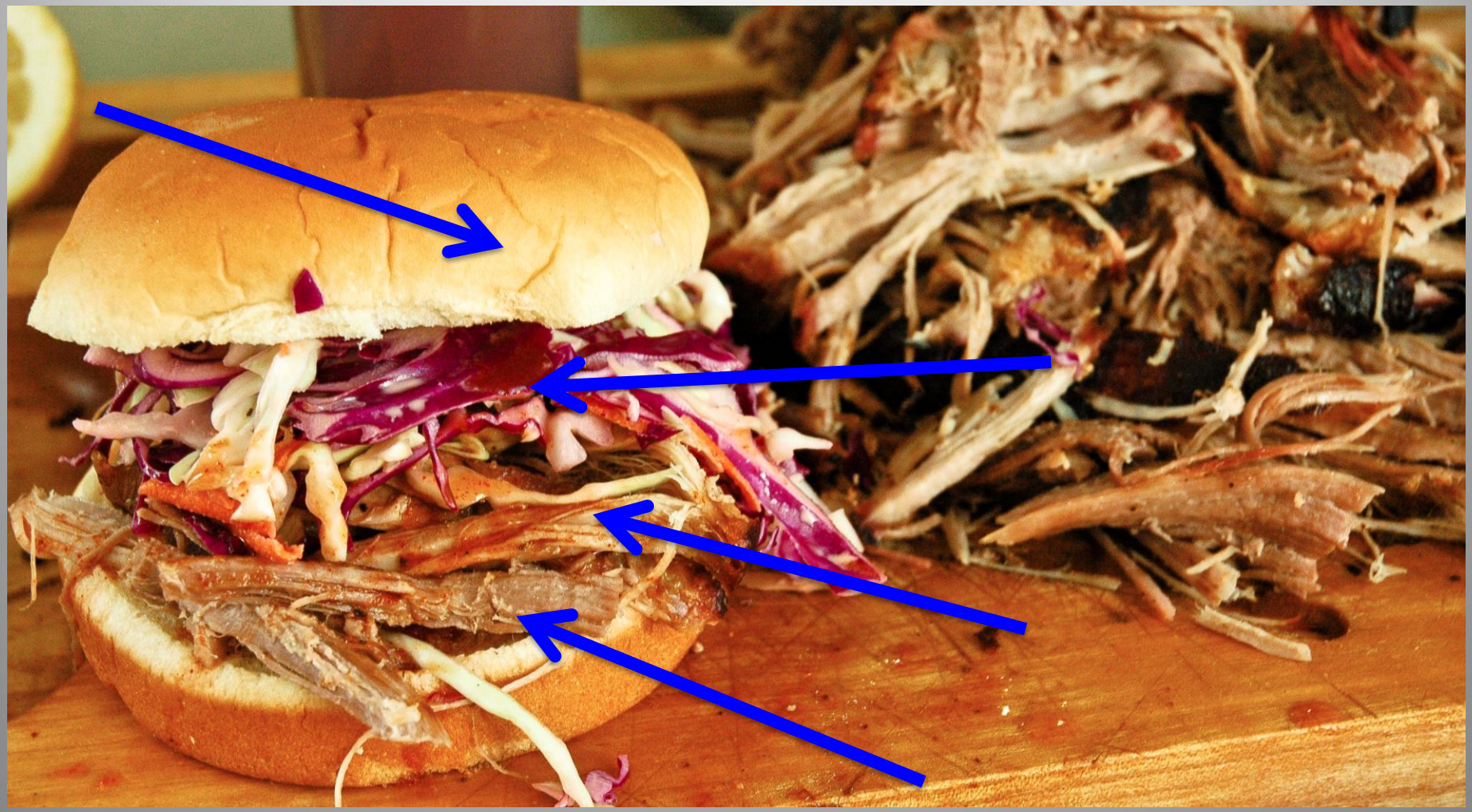
Recipe Development:

- Modify existing recipes.
- Develop new recipes.
- Create home-made supplemental nutrition options:
  - Bars
  - Smoothies/shakes
  - Fruit leathers

Recipe Modification

1. Identify **one** ingredient
2. Determine the function of the ingredient, within the recipe.
3. Modify
   - Reduction w/ Partial substitution usually best option.
   - Fats, salts and sugars are functional ingredients, not just flavor!
4. Evaluate
   - And re-modify if needed.

Example



http://sports-glutton.com/2011/07/25/carolina-panthers-carolina-pulled-pork-sandwich-recipe/

Recipe Development

- Start by emulating the “classics”
- Quickly prototype and test your idea
  - **FAIL** QUICKLY, cheaply and efficiently!
- Keep what sells
  - Dump what doesn’t

“Spice” up your menus

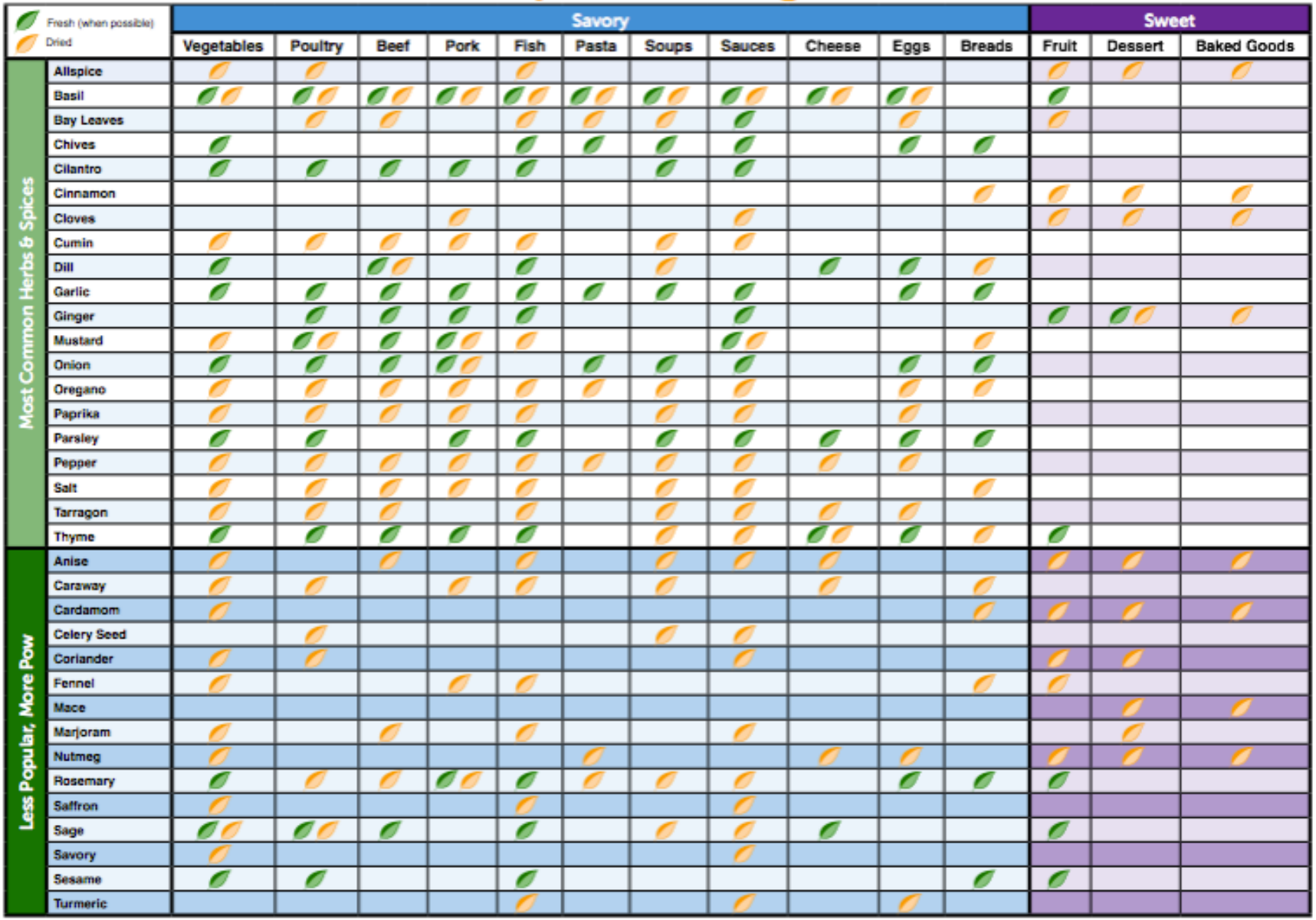
- *Spices with best supporting anti-inflammatory research:*
  - Turmeric (Curcumin) [14]
  - Chilli pepper, black pepper [15]
  - Clove [16]
  - Cinnamon [17]
  - Bay leaves [18]
  - Ginger [19]

“Spice” up your menus

- Lean about spices:
  - More depth of flavor and variety
  - Expect to need to diversify your menu options
  - Simple resources exist to help start the process

Food-Spice Pairing Chart

[20]



https://s3.amazonaws.com/beyonddiet/Products/FreeGift/SpiceChart.pdf

“Spice” up your menus

- Make your own spice blends!
  - Do not try to meet therapeutic doses with your recipes
    - Use small amounts throughout the day
  - You can “Hide” desired spices in “Bold” blends
    - Eg: Turmeric in taco blend

Homework:

- Video on building flavors with Spices and vegetables (No narration):
  - https://www.youtube.com/watch?v=VlXLHnkTmX0&feature=youtu.be

Essential techniques to healthy cooking

- Juice
- Puree / emulsifying
- Fat Substitution
- Temperature Control

Juice - Puree - Emulsify

- Mayonnaise
  - Water
  - Oil
  - Emulsifier
  - Flavoring

Juice - Puree - Emulsify

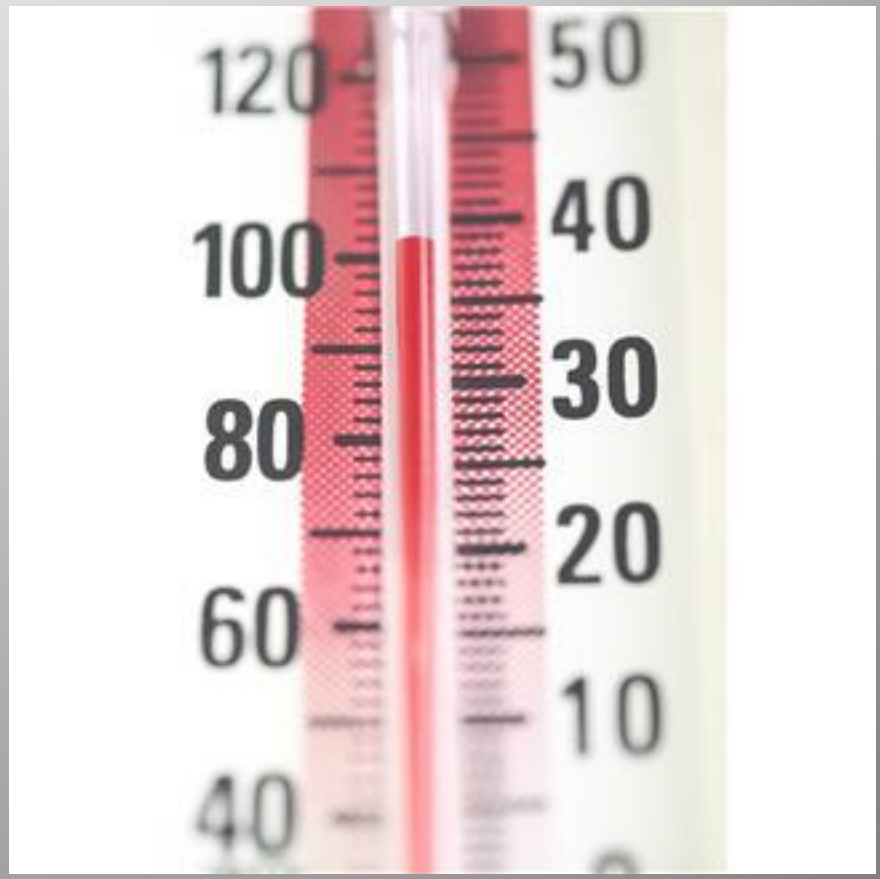
- Vinaigrette
  - Acid
  - Oil
  - Flavoring

Vegetable Purees

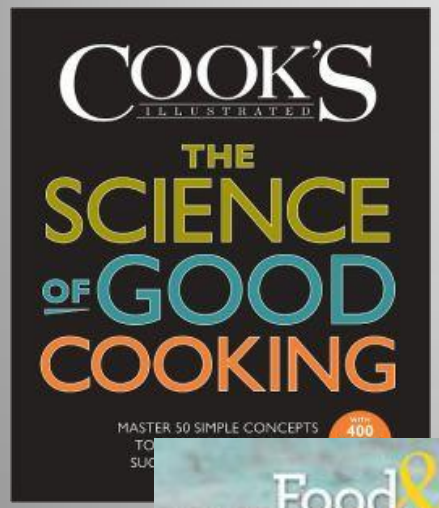
- If you want to lower fat, you have to modify viscosity! [21]
  - Salt helps “Sell” the alteration
- You need a quality blender!
  1. DESIGN
  2. Speed
  3. Power
     - Shearing potential
     - Amount of Cavitation

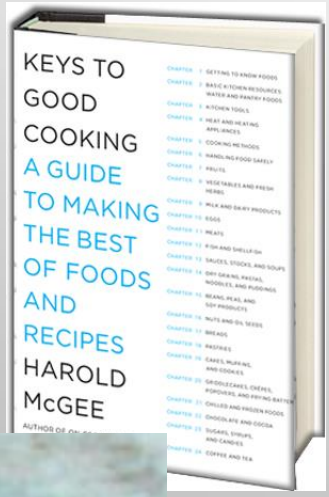
Temperature Control

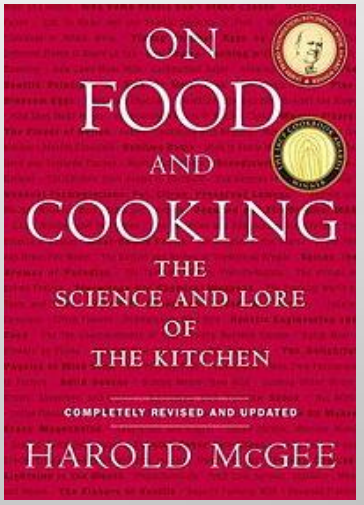
- Essential to producing products with appropriate:
  - Color
  - Flavor
  - Appearance
  - Texture

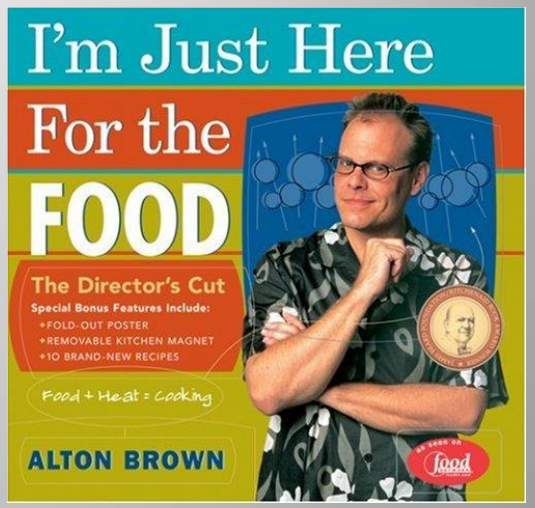


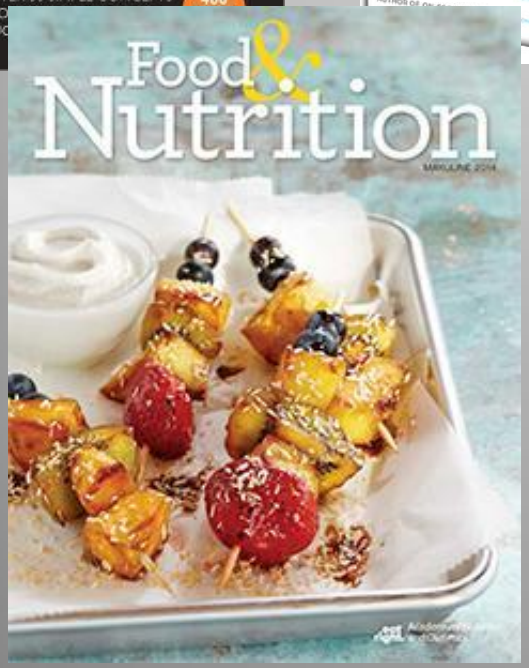
How to learn more about Food and Temperature:









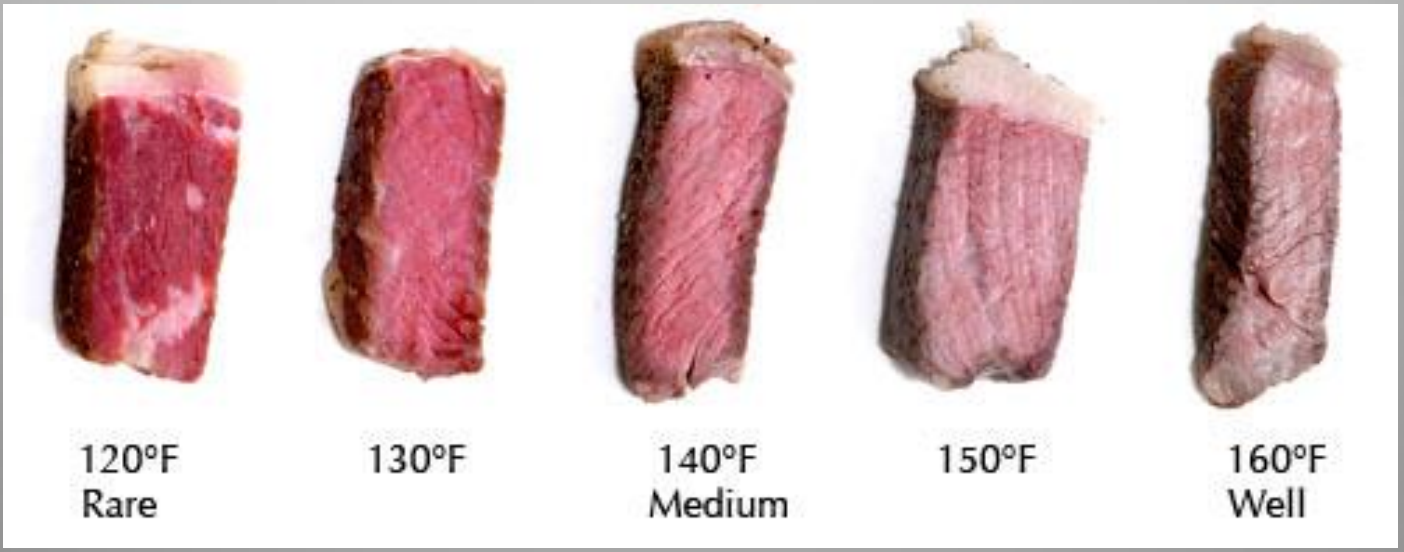


[Sous Vide: http://www.foodandnutrition.org/May-June-2014/Viva-Sous-Vide/](http://www.foodandnutrition.org/May-June-2014/Viva-Sous-Vide/)

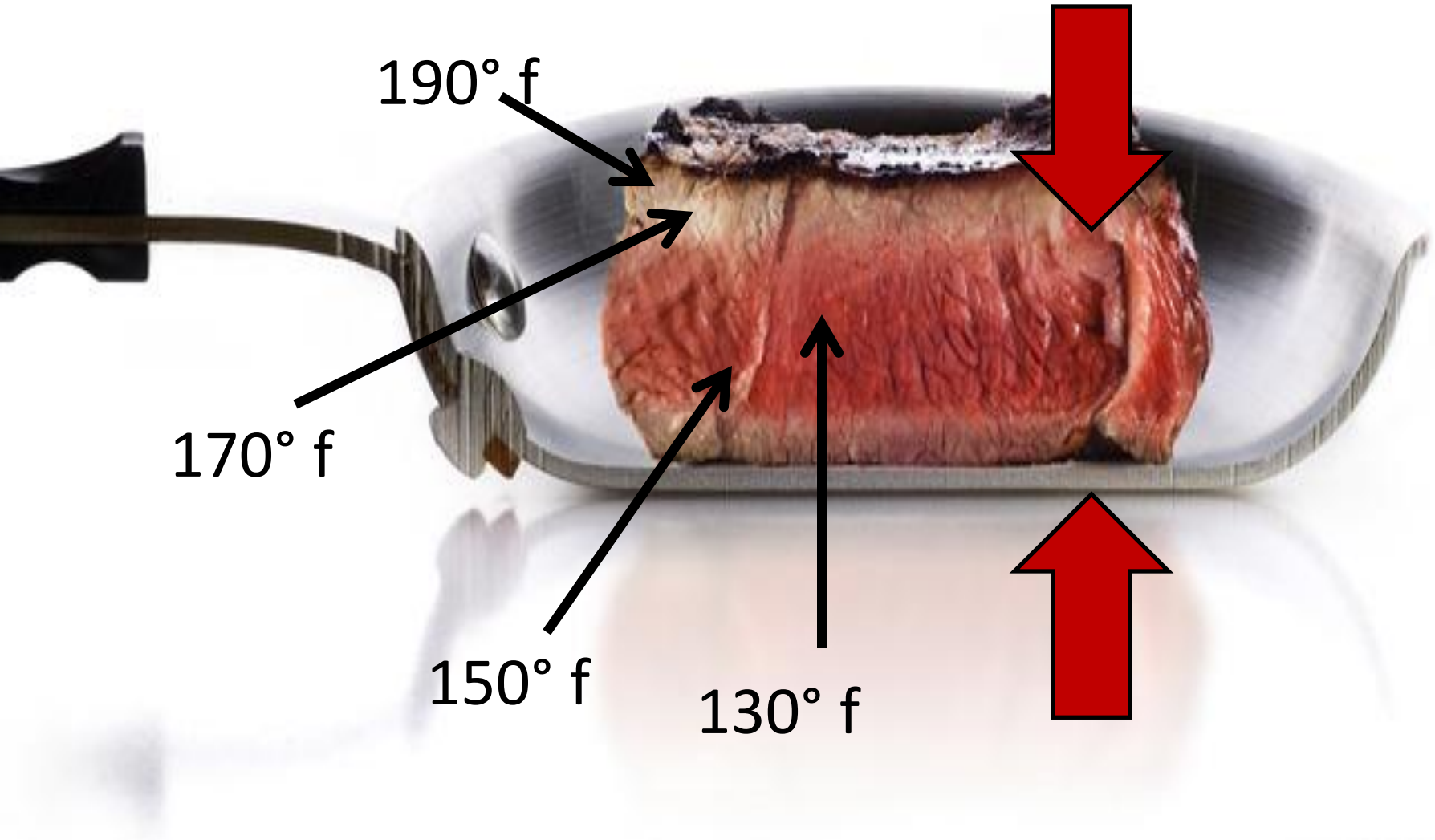
Temperature

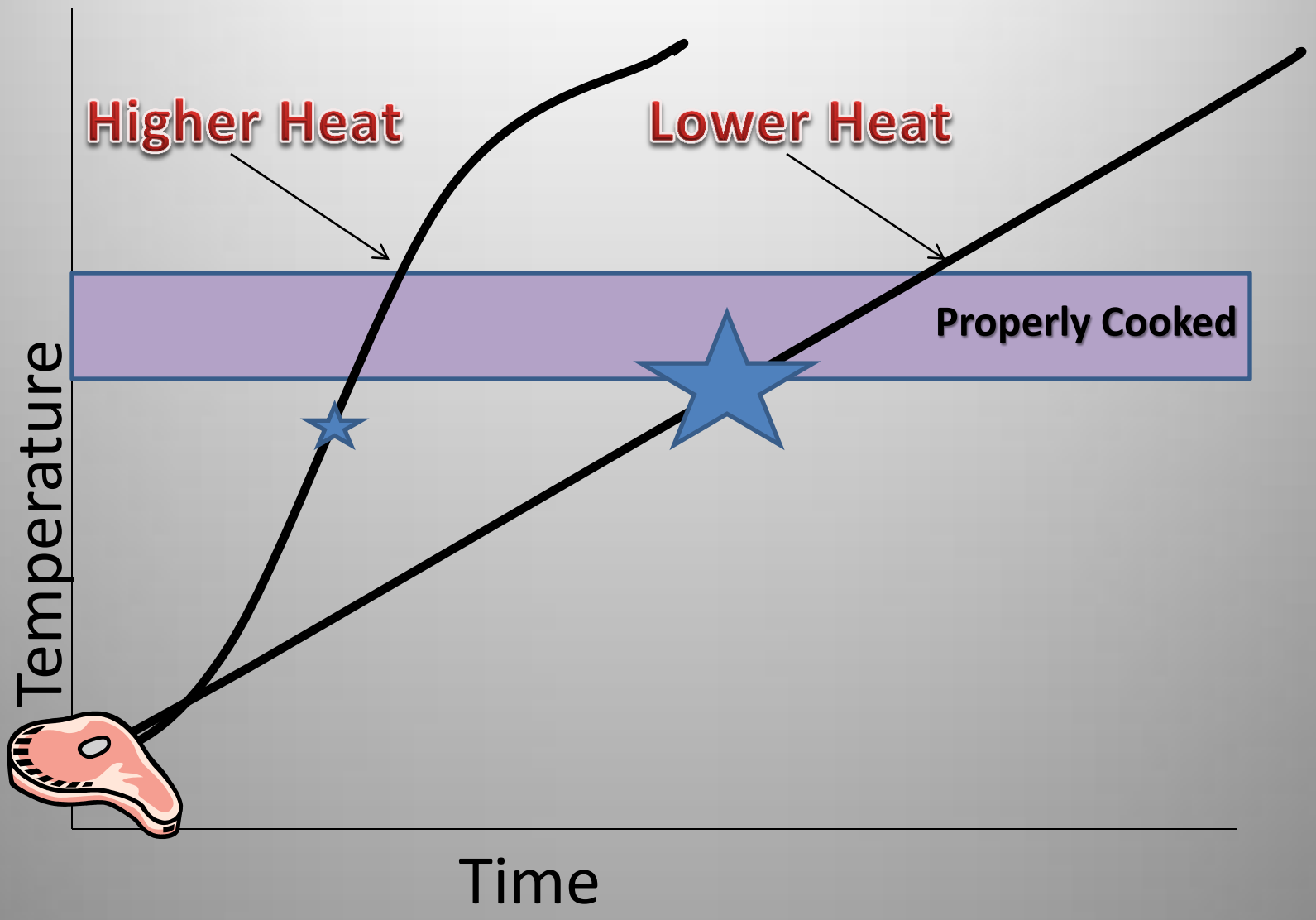
Basics

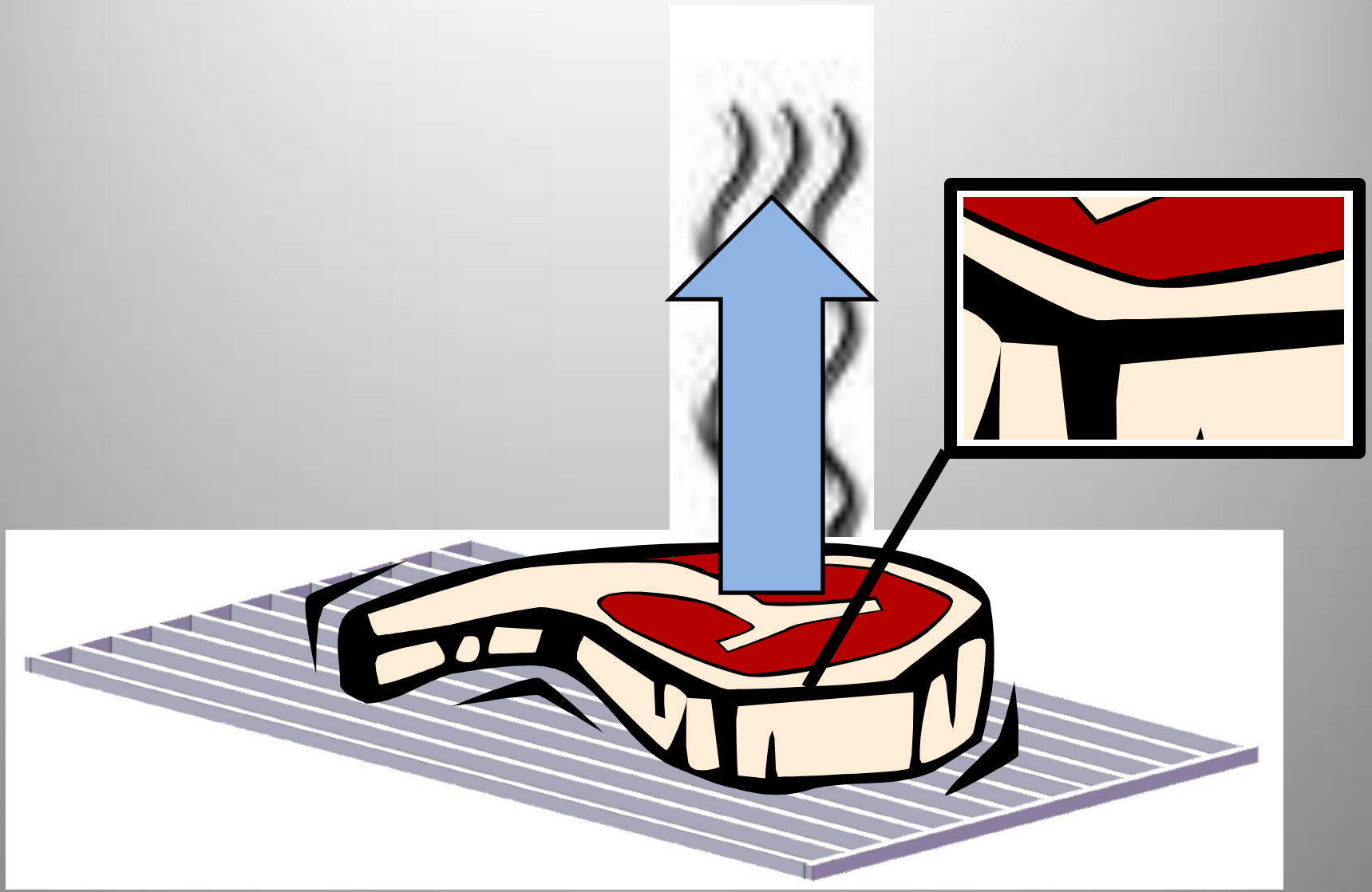
- Lower temperature to cook the meat
- Higher temperatures to sear the meat



Carry Over Cooking

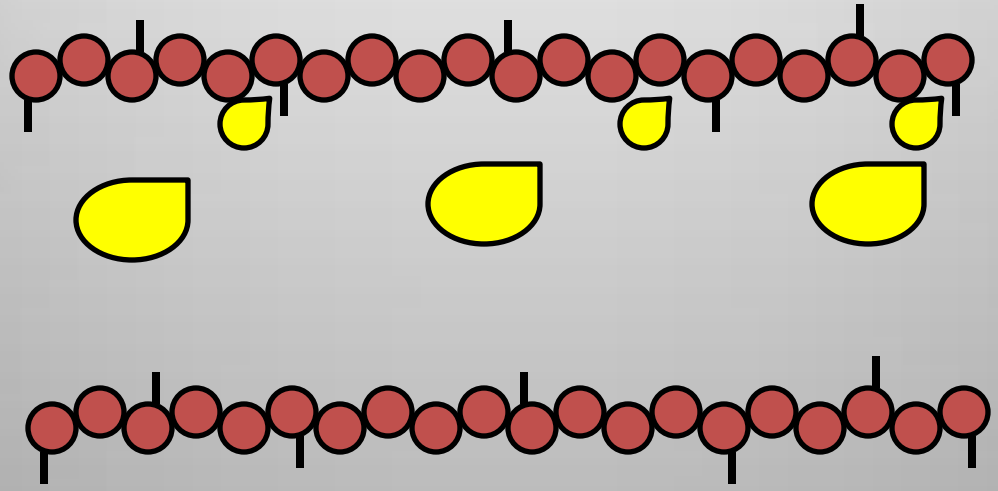



Higher Heat
Lower Heat
Properly Cooked
Temperature
Time

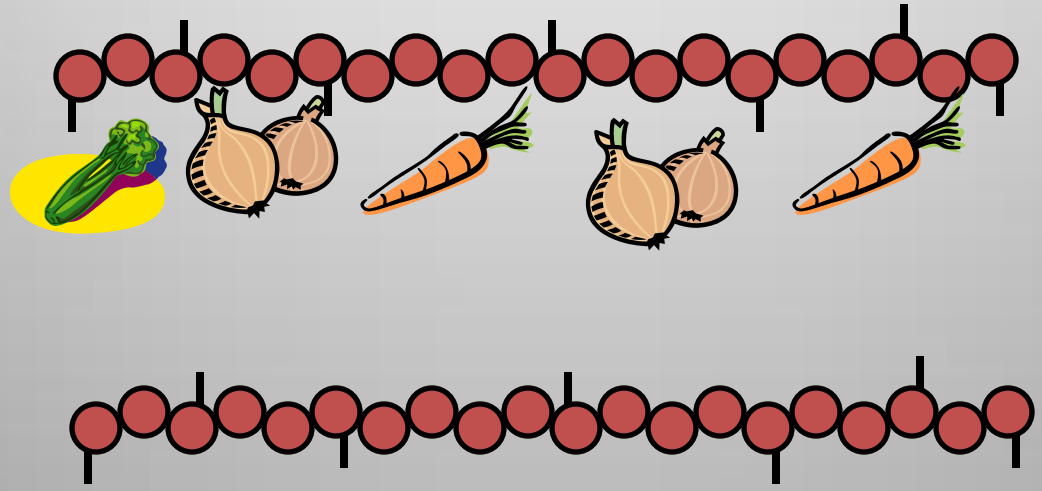


Coagulation

Coagulation



Coagulation



Recipe Break down:

1. Choose a Low fat beef
2. Puree no more than a ¼ of the volume of beef as vegetables.
   - *Sautéed onions, mushrooms should make up the bulk*
   - *Be mindful of "green" vegetables*
   - *Adding beef base / bouillon may improve flavor*
3. Form your burgers, loafs, balls
4. Cook as normal.

Homework

- How 2 heroes: Low fat meatloaf
  - http://how2heroes.com/videos/healthy-eating/low-fat-meatloaf
- Low Fat burger from CPSDA presentation (*no narration):
  - https://www.youtube.com/watch?v=jBc9r8khFEw
- Low Fat Sausage from CPSDA presentation (*no narration):
  - http://youtu.be/-y4qztVLNC0

More Home Work

- Low fat cauliflower cream sauce (*no narrative)
  - https://www.youtube.com/watch?v=ujPgTFRHhLY
- Other low fat entrees with “stealth nutrition”
  - https://www.youtube.com/watch?v=igp0Ud2qnPE

HOMEMADE
SUPPLEMENTAL NUTRITION

Homemade energy bars

- Pros:
  - You select ingredients
  - You dictate ratios
  - You control additives
  - Customized flavors
  - Often less expensive
- Cons:
  - Time and labor needed to develop recipe
  - Labor needed
  - Decreased shelf life

Smoothies

- Fast delivery of nutrients
- Customized nutrition
- Frozen berries could reduce your cost and maintain high levels of nutrition

Homemade sports drinks

<u>Recipe Template (per 8 oz)</u>

2 oz Fruit juice

6 oz Water

1/16 tsp salt

+/- 5 gm table sugar

+/- 5 gm Corn syrup or Maltodextrin

*if acidity becomes an issue, experiment with adding **<u>small</u>** amounts of baking soda.

→This will likely change the color and flavor, slightly.

Homemade sports drinks

Ingredient	per 8oz	Per Gal
Tart Cherry Juice	2oz	32oz
Water	6oz	96oz
Salt	1/16 tsp	1tsp
Table sugar	5 gm	80gm *(~6tbsp)*
Corn syrup	5 gm	80gm *(~4tbsp)*
or Maltodextrin [22]		

Per 8oz serving	CHO	Na	K
Homemade Sports drink	17gm	133mg	104mg
Commercial Sports drink	16gm	100mg	40 mg

Homework

- Homemade Sports Bars (*no narration):

http://youtu.be/x3yruN9_iBE

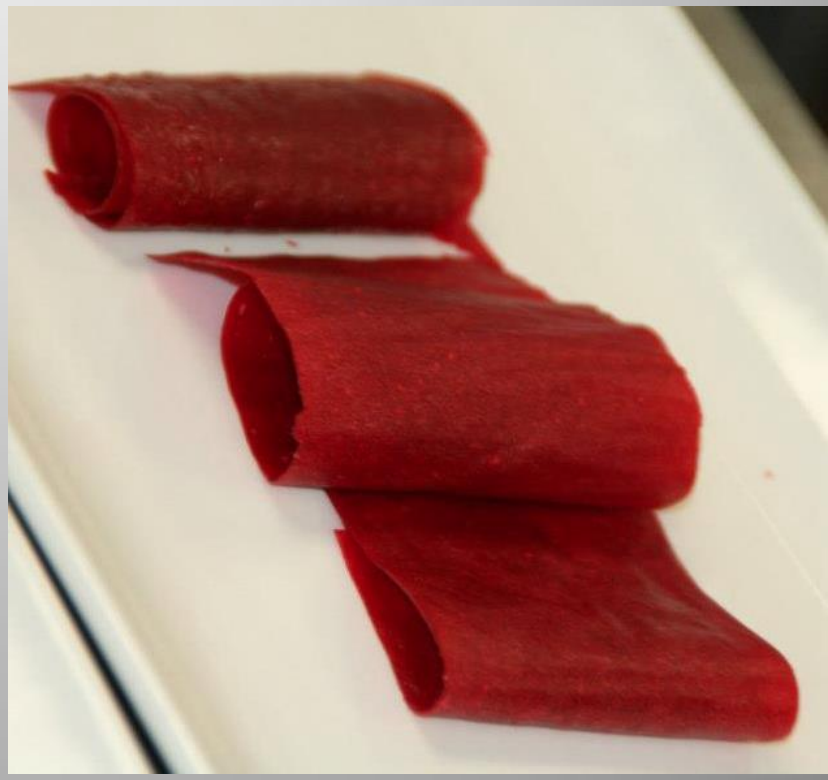
- Homemade Sports Drinks (*no narration)

http://youtu.be/A1Fn-QSEcMw

Expensive Leftovers?

- If you use fresh fruits:
  - Expensive
  - VERY perishable

- What happens if they you can't use them in time?



Fruit Leathers

- Select Ripe to over-ripe fruit
- Wish the fruit
  - *If the fruit has a hard skin, scrub the fruit as you wash it.*
- Blanch the fruit in a double boiler or in a steamer for 15-20 minutes OR until it reaches a temperature of 160°F
  - *The step can occur AFTER the puree stage, if desired.*
- Puree the fruit until smooth.
  - Strain is needed
- Add preservatives*
- Place on a piece of OILED parchment paper and spread out to a thin.
- Place in a commercial dehydrator, set to at least 150°F.
  - *Make sure you do not overload the dehydrator.*
  - *Leave space for appropriate air flow.*
- Fruit leather should be ready for consumption in 2-3 hours, if these procedures are followed.

Preservatives:

To ensure food safety, make sure the following ingredients are added to the fruit leather:

*To bind up free-water, be sure to add a minimum of **1 tbsp** of honey, sugar or corn syrup **per CUP** of fruit puree*

*To lower pH, be sure to add **1 tbsp** of lemon juice (or ¼ tsp of ascorbic acid crystals), **per CUP** of puree.*

TABLE 1. Suitability of fruits for drying

Fruit	Suitability for Drying	Suitability for Fruit Leather
Apples	Excellent	Excellent
Apricots	Excellent	Excellent
Avocadoes	Not recommended[1]	Not recommended
Bananas	Good	Fair to good
Berries with seeds	Not recommended[2]	Excellent
Blueberries	Fair	Poor unless in combination
Cherries	Excellent	Excellent
Citrus fruits	Not recommended[3]	Only in combination
Citrus peel	Excellent	Only in combination
Crabapples	Not recommended[4]	Only in combination
Cranberries	Poor	Only in combination
Grapes	Excellent	Fair to good
Melons	Poor	Not recommended
Nectarines	Excellent	Excellent
Papayas	Good	Better in combination
Peaches	Excellent	Excellent
Pears	Excellent	Excellent
Persimmons	Fair	Not recommended
Pineapples	Excellent	Excellent
Plums	Good	Good
Pomegranates	Not recommended[5]	Not recommended
Prune plums	Excellent	Excellent
Rhubarb	Good[6]	Fair
Strawberries	Fair to good	Excellent

[1] High fat content.
[2] High seed content and slow rate of drying.
[3] Too juicy and pulp lacks firm texture.
[4] Too small and tart; can be combined wiht other fruit for leather
[5] Pulp is full of seeds.
[6] Never consume leaves – they contain toxic salts of axalic acid.

[23]

Why not just go with commercial offerings?

- Supplements DO have their place….
- Fresh ingredients DO NOT lend themselves to:
  - Consistency
    - Flavor
    - Color
  - Lengthy shelf-life
  - Cost stability

Closing comment…

- Resveratrol shows acute anti inflammatory effects in the postprandial state… [24]

Shameless Plug

- *Johnson & Wales Culinary Nutrition Degree Candidates need to participate in an 11 week experiential education experience…*

- **Experiential Education Coordinators**
  - Dianne Compos - Dianne.Compos@jwu.edu

    401-598-2144

Questions?!?

Kitchen resources (*they are free)
FOOD SAFETY MATERIALS

- JWU Gold Standard for food safety:

http://www.jwu.edu/uploadedFiles/Documents/Academics/brochures/JWUCulFoodSafetyGoldStandardsGuideUNIV.pdf

THANK YOU.

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Thank you for attending!

- Thanks to CPSDA for recommending Todd for our presentation today. Look for additional discussion on timely sports nutrition topics at the annual conference: May 19-22nd in Scottsdale, AZ. Visit www.sportsrd.org.

  (and don't forget to stop by the Human Kinetics exhibit booth!)

- Subscribe to e-newsletters and receive discounts on Human Kinetics sport nutrition books and e-books: www.HumanKinetics.com/Rewards

- Need CECs/CEUs? Find more than 150 courses at www.DSWFitness.com.

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***Additional Reading:**

"Reduction of Oil Absorption in Deep-Fried, Battered, and Breaded Chicken Patties Using Whey Protein Isolate as a Post-breading Dip"

http://onlinelibrary.wiley.com/doi/10.1111/j.1750-3841.2008.00902.x/pdf