

From Last Time:

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Mint Family Herbs

Mints (*peppermint, spearmint, wintergreen, etc*)

- Basil
- Oregano
- Rosemary
- Lavender
- Bergamot
- External oil “glands”

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Carrot Family Herbs

- Celery
- Parsley
- Cilantro
- Dill
- Fennel
- Oil canals in leaves

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Laurel Family Herbs

- Bay leaf
- Avocado leaf
- Sassafras

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Carrot Family Spices

- Coriander
- Celery
- Cumin
- Dill
- Fennel
- Caraway
- Small dried fruits

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Cabbage Family Spices

- Mustards
- Wasabi
- Horseradish

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Making "mustard"

Soak seeds
Enzyme activation
Grind and mix
Add acid (vinegar)



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Bread

Flat/Unleavened breads

Grains ground with water and cooked
More palatable, transportation advantage



Image: http://www.indianfoodsite.com/breads_indian_paratha.htm



Image: http://www.cepolina.com/bread_Muslim_unleavened.html



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Unleavened Breads

Tortillas
Lavash
Matzah

Thin and often cracker-like



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"Leavening"

Chemical or Biological
Forming and trapping gas



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Chemical Leavening

Carbonates + Acid = $\text{CO}_2(\text{g})$

Relatively fast gas formation

Little other character

"Quickbreads"

"Soda bread"

Cakes



Images: <http://www.bellaonline.com/articles/art55628.asp>
<http://www.diabetesselfmanagement.com/recipes/breads/>
http://www.salon.com/2010/08/12/fish_soda_bread_how_to_make_quickbreads/

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How much $\text{CO}_2(\text{g})$?

1 Tablespoon Baking Soda =

25g $\text{NaHCO}_3(\text{s})$

Can produce $\sim 7\text{L}$ of $\text{CO}_2(\text{g})$

7L = 1.9 gallon



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Trapping the gas

Need a network of large molecules

Protein!

Gluten = long protein chains

Glutenins link together, form gluten

Disulfide bonds = strong

Longer glutens = chewier bread

Kneading...



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Modifying Gluten

Flour type – high protein (↑ gluten)

Oxidizing substances (↑ gluten)

“Wet” dough (↑ gluten)

Lots of kneading/mixing (↑ gluten)

Salt (↑ gluten)

Sugar (↓ gluten)

Fats & Oils (↓ gluten)

Acid (↓ gluten)



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