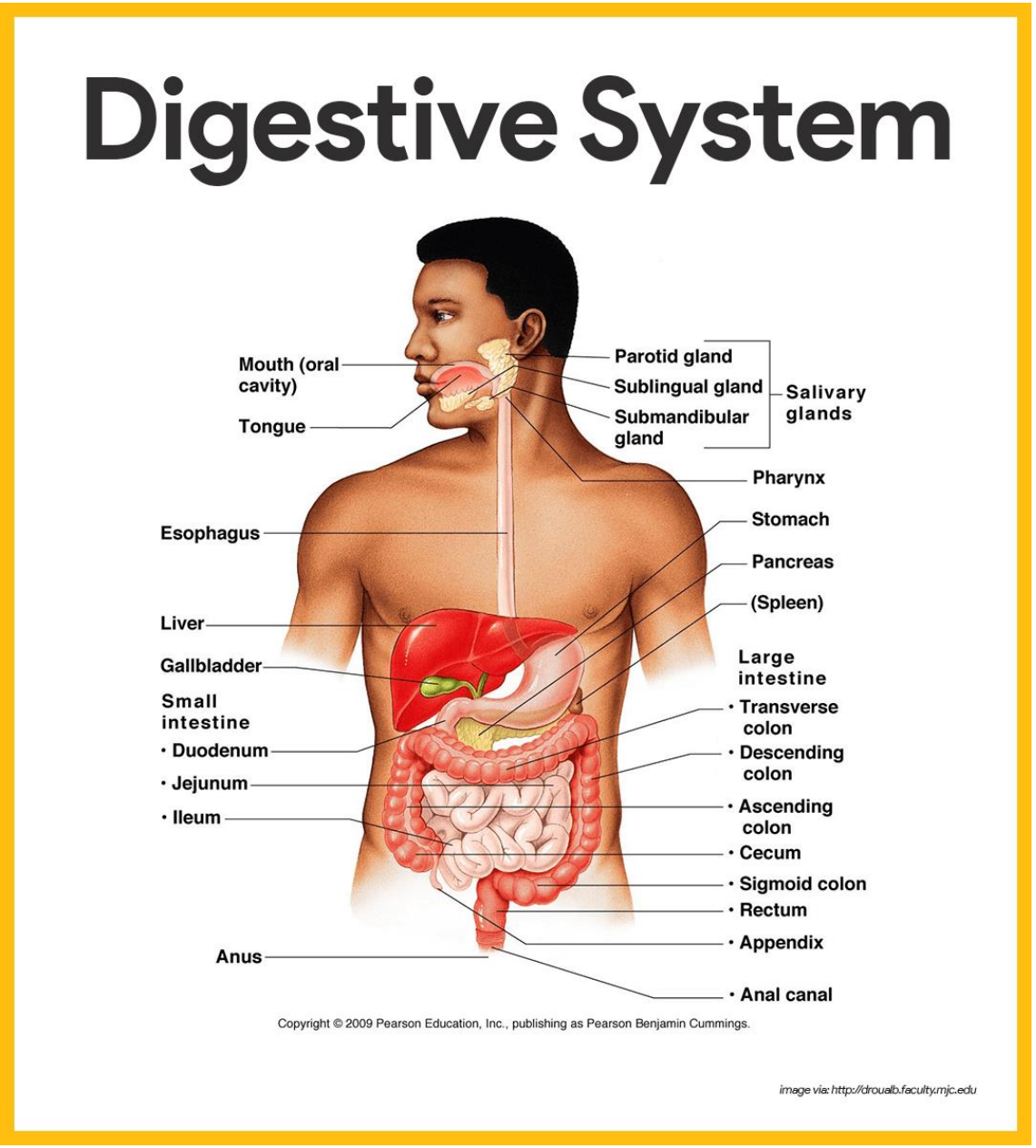
TREATING AND PREVENTING THE METABOLIC SYNDROME

SUGAR HANDOUTS 2

MICROBIOME AND METABOLIC HEALTH



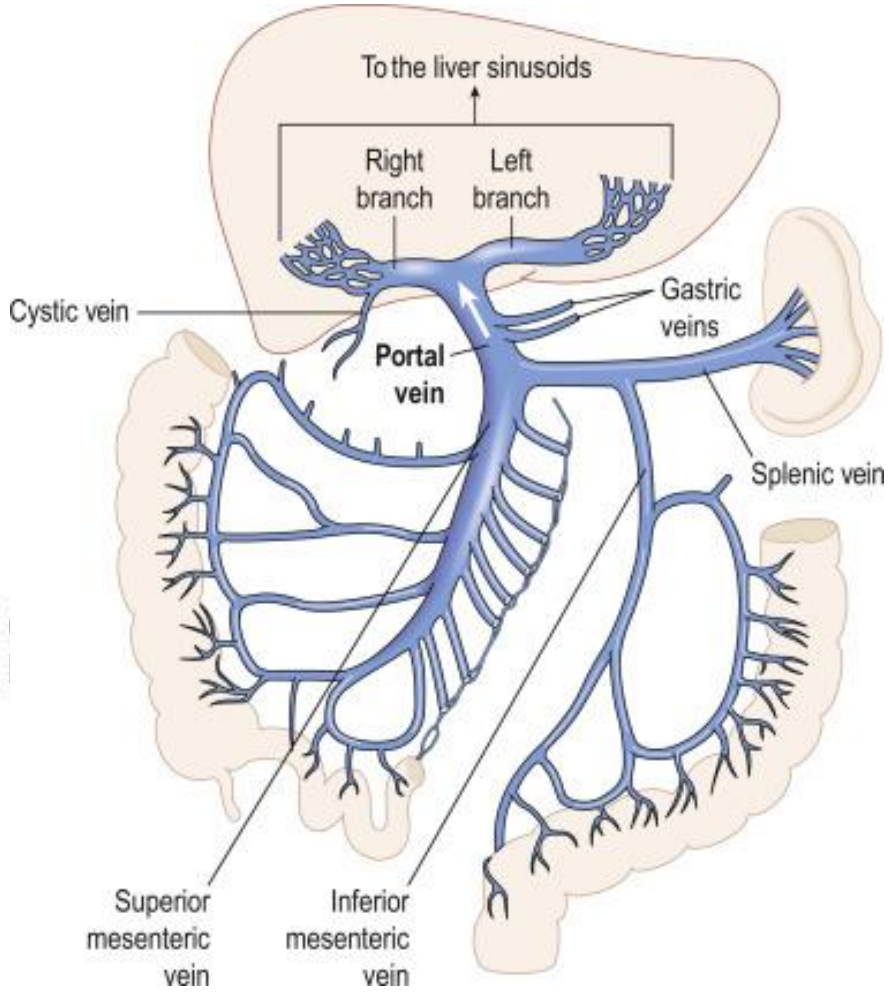
TOXINS TO HEALTH

MOUTH WASHES

PROTON PUMP INHIBITORS

SUGAR/FAT EXCESS

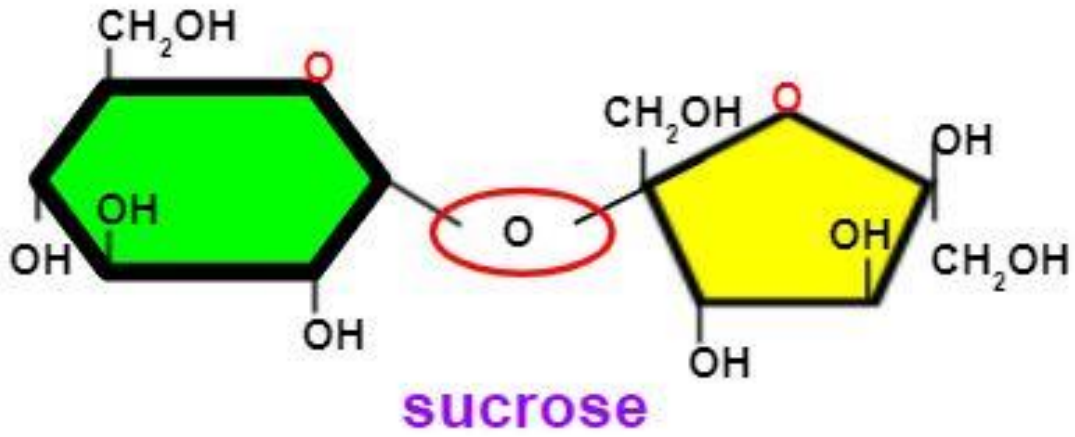
ANTIBIOTICS



Excess sugar → insulin → fuel storage and fatty liver → metabolic syndrome

“SUGAR”=SUCROSE=GLUCOSE+FRUCTOSE

Table Sugar is produced from sugar cane and beets. Sucrose is also found in fruits and some plant roots and has >200 names in USA labels, so it is harder to recognize as an additive.

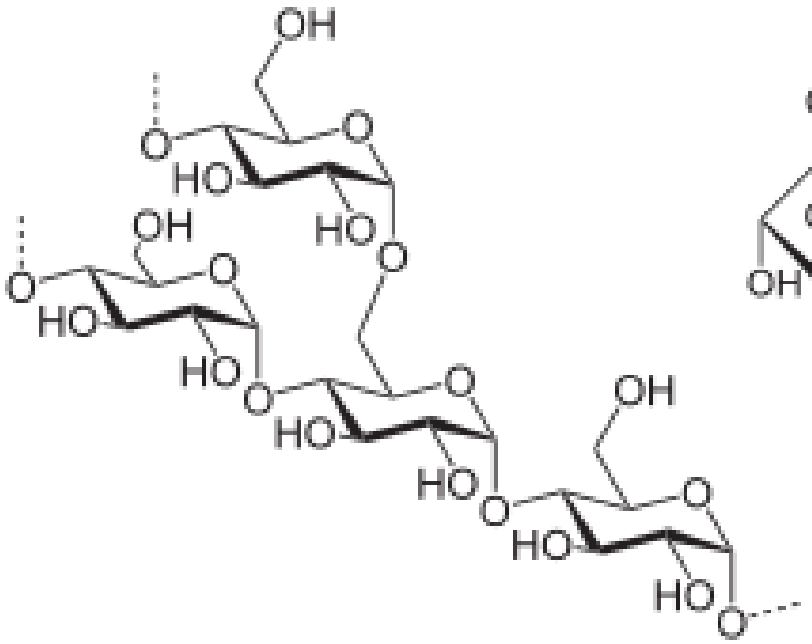


GLUCOSE:
Toxic if over eaten or over cooked

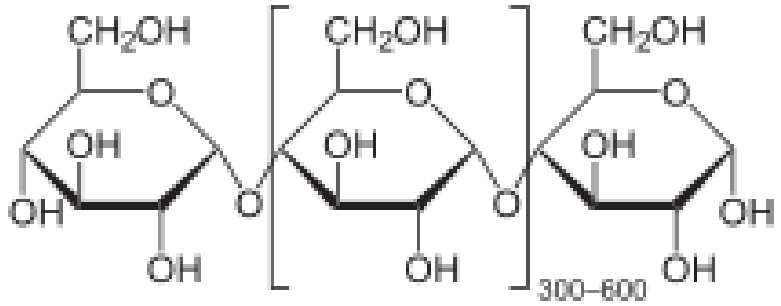
FRUCTOSE:
VERY SWEET AND TOXIC!

STARCH: a polymer of glucose molecules found in Corn, soy, wheat, rice, potatoes.

insoluble in water, forms paste



Amylopectin
Glycogen in liver
and muscle

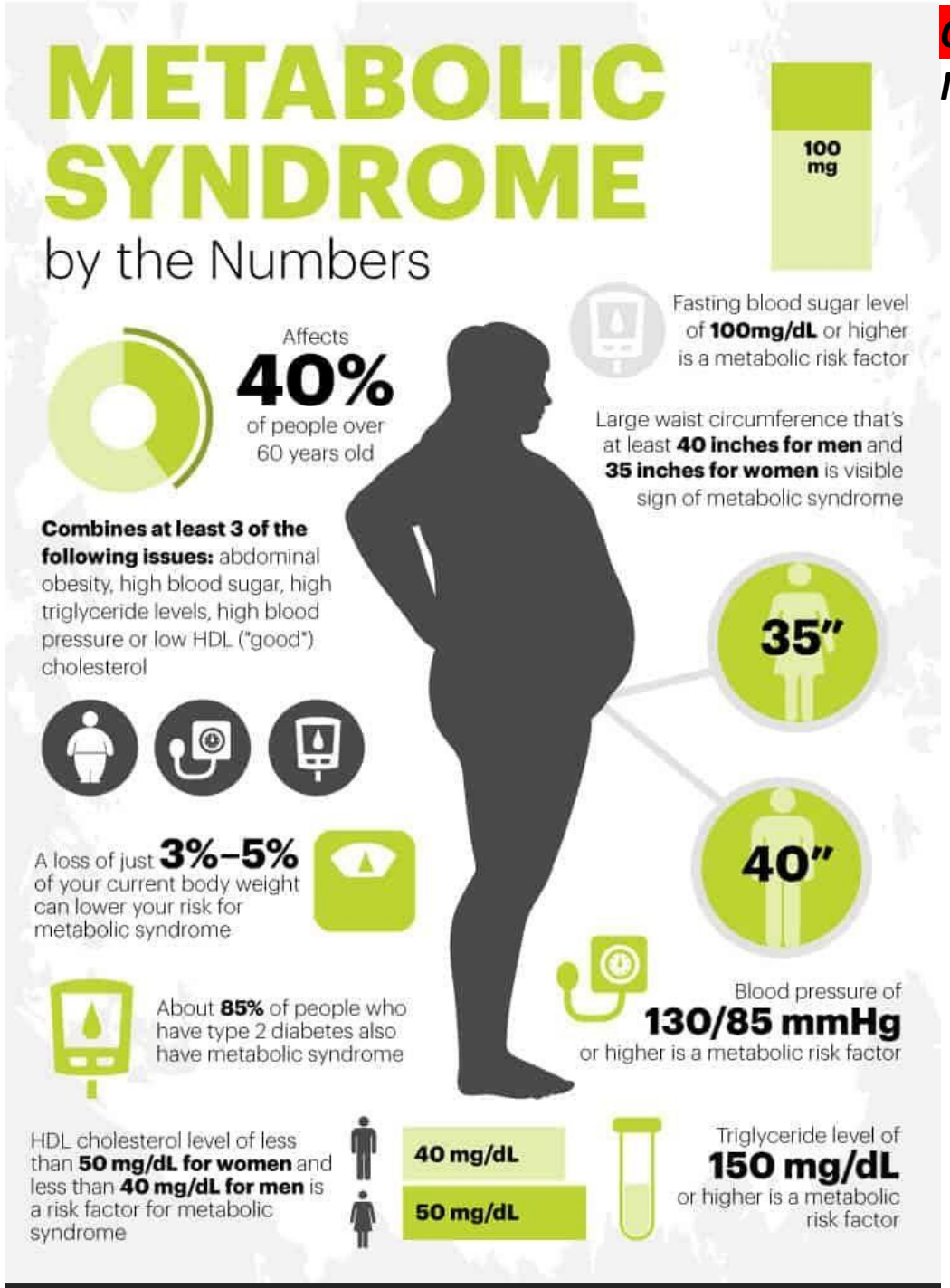


amylose

TOXICITY IN COOKING

During cooking with high heat, sugars released from starch can react with amino acids via the Maillard reaction forming advanced glycation end products (AGEs), contributing aromas, flavors and texture to foods.

One example of a dietary AGE is acrylamide. Recent evidence suggests that the intestinal fermentation of dietary AGEs may be associated with the metabolic syndrome. This may be due to the impact of AGEs on intestinal permeability.



***OXIDATIVE STRESS* IS CAUSED BY INGESTING INDUSTRIALLY CONENTRATED SUGARS AND OILS**

CONCENTRATIONS IN EXCESS OF WHAT OUR 2.5 MILLION OLD HOMINID-GENOMICS CAN HANDLE

THE MITOCHONDRIAL FURNACES OVERHEAT AND SPILL ELECTRONS GATHERED BY OXYGEN PRODUCING REACTIVE OXYGEN SPECIES, ROS

ROS

Metabolic syndrome is a cluster of conditions that occur together, increasing your risk of

heart disease,
stroke and type 2 diabetes.

These conditions include

increased blood pressure,
high blood sugar,
excess body fat around the waist,
and abnormal cholesterol or triglyceride levels.

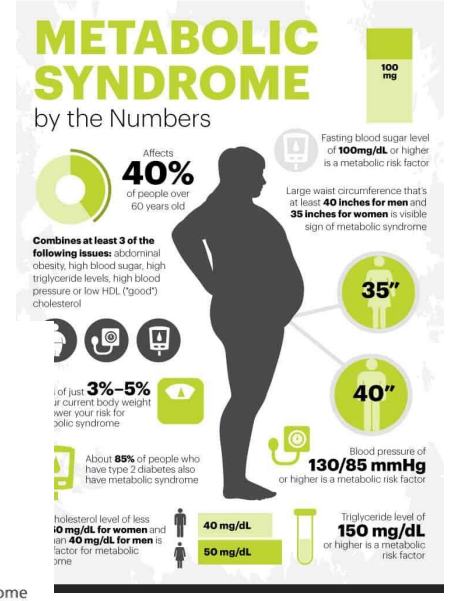
not enough nitric oxide to neutralize ROS

nitric oxide

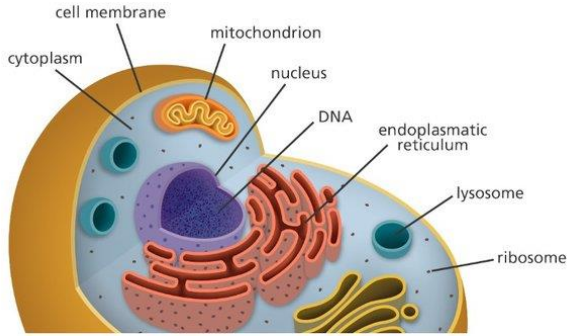
SUPEROXIDE

1 . CELLULAR TOXINS=SUGAR+TRANS FATS

NITRIC OXIDE SYNTHESIS: URIC ACID FROM ADENINE METABOLISM FROM OVERFEEDING



2. MITOCHONDRIAL TOXINS



1. **EXCESSIVE REACTIVE OXYGEN SPECIES, ROS, (FROM OVER FEEDING SUGARS, FATS.**
   NOT BALANCED BY N=0, MELATONIN, METATHIONE

   e.g., >4 tsp.=24 gm. sugar/day= **FRUCTOSE >12.5 gm/day, METABOLITES, LIKE ADVANCED GLYCATION SUBSTANCES, AGEs, e.g., acrylamide**
   DYSBIOSIS MAKES THIS WORSE

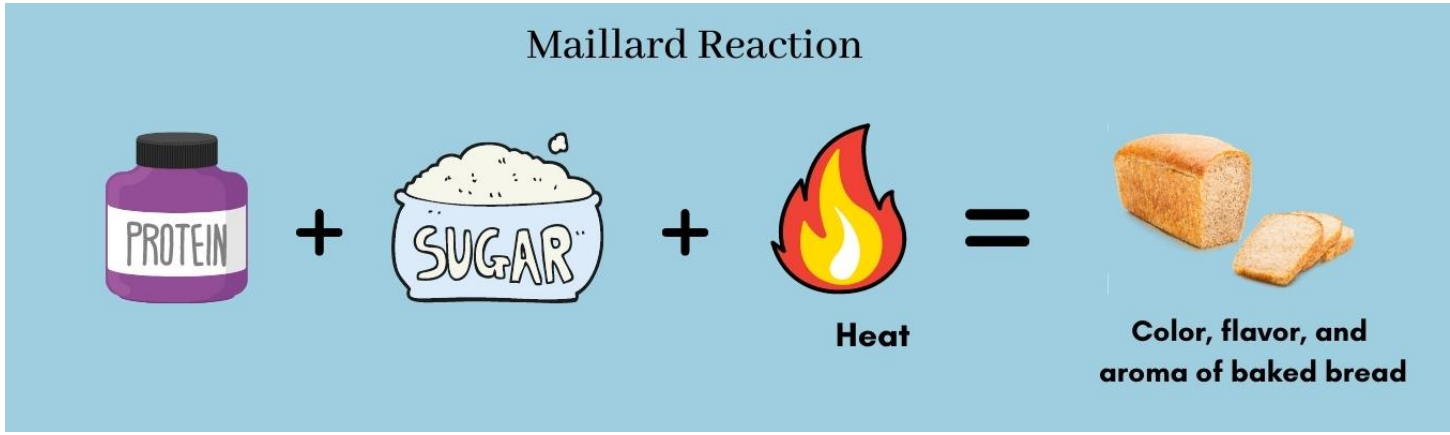
2. **PESTICIDES, PFAS, PCAS, MYCOTOXINS, HEAVY METALS.**

3. **UNSATURATED, OMEGA 6 FATTY ACIDS**: OMEGA 3=1:1 LOW INFLAMMATION,
   3:1 NORMAL,
   WESTERN DIET(UPFs) e.g., emulsifiers and gums 30:1 HIGH INFLAMMATION..

EAT WHOLE FOOD, NOT ULTRA PROCESSES ADDITIVES!

OMEGA 6 IS A MITOCHONDRIAL OUTER MEMBRANE DYSRUPTER.
BETTER ADD OMEGA 3 (plants, wild fish).

COOKING HAZARD



THE BROWNING REACTION PRODUCES
A STIFFENING OF PROTEINS
FLAVORFUL TASTES AND AROMAS

BUT ALSO PRODUCES O2-, OXYGEN READICALS, TOO!

DO WE HAVE N=O- TO NUETRALIZE THIS OXIDATIVE STRESS?

284-330 F;

optimal temp. for browning.

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Sugar + amino acids + heat produces…

…AGEs: ADVANCED GLYCATION END PRODUCTS

The preparation of French fries at high temperature can lead to the formation of ACRYAMIDE, which is associated with the metabolic syndrome.

Salt + carbohydrates toxic combination

AGEs can induce crosslinking of COLLAGEN which can cause **vascular stiffening** and entrapment of (LDL) in the artery walls. AGEs can also cause glycation of LDL which can promote its oxidation. **Oxidized LDL** is one of the major factors in the development of **atherosclerosis.**