

DIETARY FIBER AND GUT HEALTH

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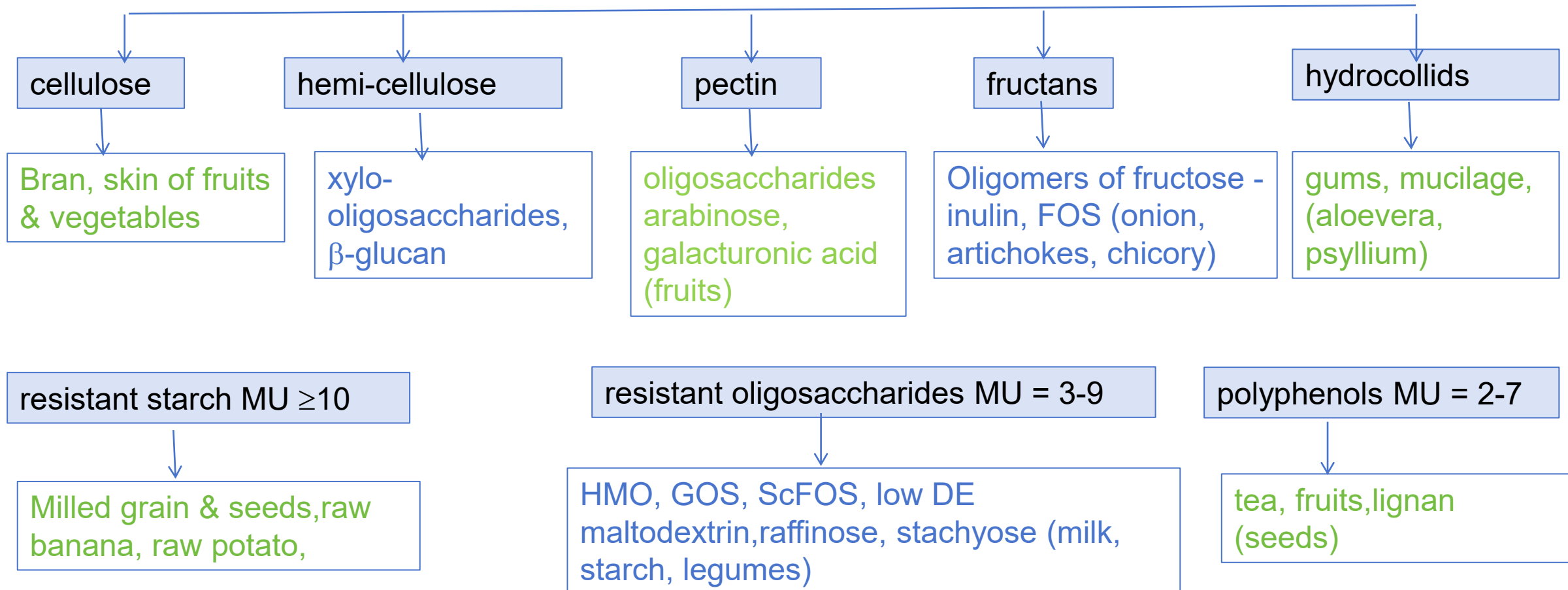
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WHAT IS DIETARY FIBER

- Dietary fiber = carbohydrate in plant foods, such as whole grains, vegetables, fruit, and legumes resistant to digestion
- The officially published Guidelines on Nutrition Labelling- refers to “carbohydrate polymers with ten or more MONOMERIC UNITS, which are resistant to hydrolysis by endogenous enzymes and absorption in the small intestine of humans”
- The European Food Safety Authority (EFSA) -includes resistant oligosaccharides with $DP \geq 3$,
- ‘fiber-like’ physiological effects,
- including promotion of a healthy gut microflora and SCFA production in the colon
- recently polyphenols are also included as dietary fiber

TYPES OF DIETARY FIBER

non-starch polysaccharides MU ≥ 10



GUT MICROBIOME

- Gut microbiome - ecosystem of microbes colonizing human gastrointestinal tract.
- Approximately 100 trillion micro-organisms
- Established in the first few years of life
- Highly variable between individuals (including siblings)
- Modified by environment, diet (habitual & short term), host genotype & lifestyle.
- Markedly influenced by drugs and disease
- Able to ferment indigestible dietary fiber

Six major phyla

Firmicutes (Bacillota)

Bacteroidetes (Bacteroidota)

{ > 90% }

Actinobacteria (Actinomycetota)

Proteobacteria (Pseudomonadota)

Fusobacteria (Fusobacteriota)

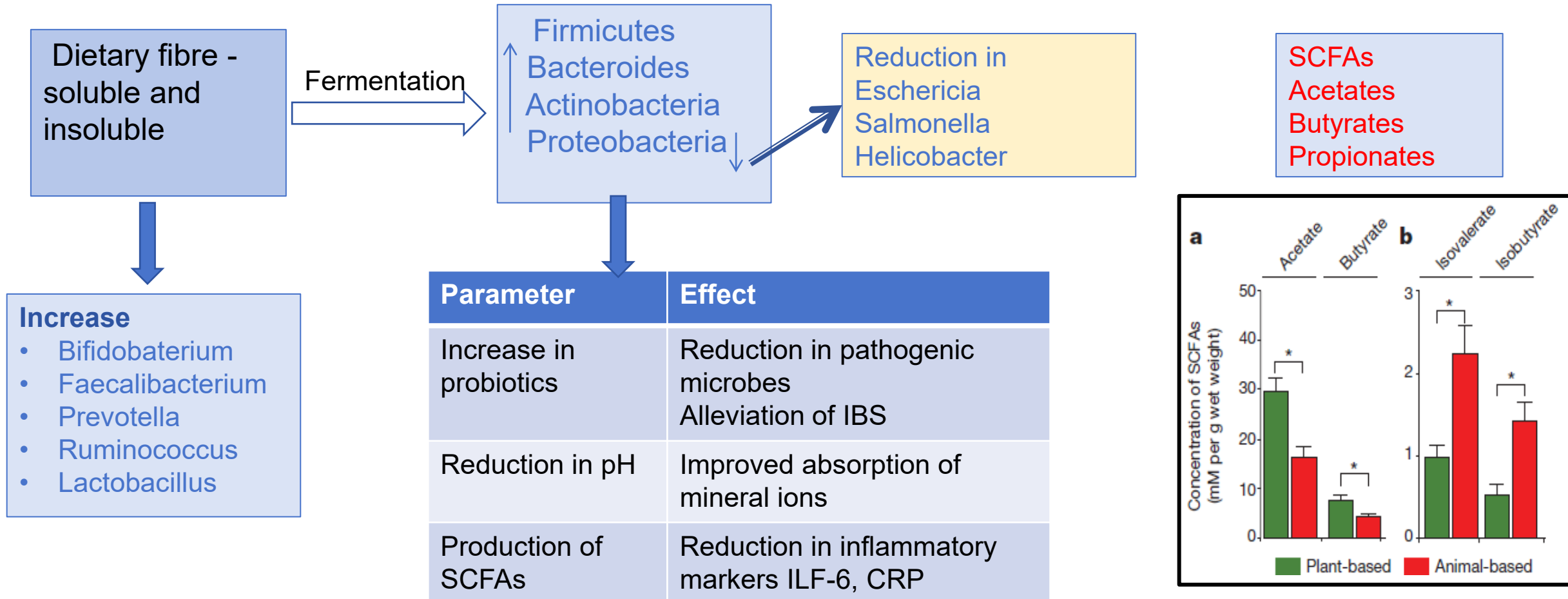
Verrucomicrobia (Verrucomicrobiota)

{ < 10% }

Int J Syst Evol Microbiol. 2021; 71(10).

DIETARY FIBER AND GUT MICROBIOME

- Microbiota fermentation of dietary fibre generates short-chain fatty acids (SCFAs)



Dietary fiber in Indian Food

Asian J Pharm Clin Res,(2015,)8(3)58-61

Food Item	g/portion	Fiber content (g)		
		Crude DF	TDF	Soluble
Cereals and millets	30	0.564	3.411	0.552
Pulses	30	0.27	3.222	0.648
Egg	50	0	0	0
Meat/chicken/fish	50	0	0	0
Toned milk (ml) and milk products	100	0	0	0
Roots and tubers	100	0.73	2.86	0.93
Green leafy vegetables	100	0.8	3.25	0.8
Other vegetables	100	1.72	4.42	1.24
Fruits	100	0.625	1.95	0.65
Sugar	5	0	0	0
Fat and oils (visible)	5	0	0	0

DF: Dietary fiber, TDF: Total dietary fiber

Reported DF content in selected RTE foods

Product	DF (g/100 g dry weight)		
	Soluble	Insoluble	Total
Pongal	2.11	6.12	8.23
Khara bhath	2.64	6.7	9.3
Dal fry	3.7	6.9	10.6
Bise bele bhath	3.36	9.97	13.33
Rajmah masala	6.46	12.4	18.86
Kesari bhath	6	8.8	14.8
Vegetable khichdi	12.3	5.9	18.2
Vegetable pulav	12.3	1.1	13.4
Chicken pulav	12.2	1	13.2
Mutton pulav	18.8	1.2	20
Sooji halwa	10.3	2.5	12.8
Upma	17.2	1.1	18.3
Potato peas curry	10.1	3	13.1
Cauliflower peas curry	5.1	0.4	5.5

DF: Dietary fiber, RTE : ready to eat

Excess Consumption of Dietary Fiber

- May lead to undesirable side effects, such as
- flatulence,
- bloating,
- stomachaches,
- diarrhea,
- constipation

- RDA for dietary fiber women
- 25 g/day -Sedentary work
- 30g/day - Moderate work
- 40g/day - Heavy work

advisable to increase water in diet along with increase in fiber