

# Chapter Outline of *The Case Against Sugar*

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## **Introduction—Why Diabetes?**

3-12 He provides accounts of early cases of diabetes showing its rarity and the growth of the disease into an epidemic in the 20<sup>th</sup> century.

12-17 --causal links of epidemic to sugar

17-20 --implications of case against sugar to other diseases, overview of prime causal condition: insulin resistance; provides overview of book

24-27 --previous work, set goals and limits of book, clarify points

1. Causal link can't be definitely established
2. What exactly are we talking about—defines sugar, sugars, fructose, sucrose
3. How much sugar do we consume

## **Chpt. 1: Drug or Food**

30-44 Chapter explores physiological, chemical, and social information about our craving for sugar and its possible nature as a drug we are addicted to

## **Chpt. 2: The First Ten Thousand Years**

45-47—Talks about man's relationship with sugar over time.

47—useful in food preparation

48—sugar in Europe in the past, medicinal uses, expensive, when the price dropped it shifted to become a sweetener in foods

53—in 17<sup>th</sup>-19<sup>th</sup> century sugar was equivalent to oil in 20<sup>th</sup> century, led to wars, empire, fortunes.

Transformed from the luxury of kings to the kingly luxury of commoners

55—Two factors led to transformation of sugar from being luxury of kings

- 1) beet sugar industry
- 2) technology, industrialization of production of sugar made it much more cheap

58-63—Four industries emerged and led to sugar saturation in 1840s: chocolate, candy, ice cream, and soft drinks (1880s)

### **Chpt. 3: Marriage of Tobacco and Sugar**

64—sugar's role in the epidemic of lung cancer resulted from the 20<sup>th</sup> century emergence of the American Blended Cigarette.

66—flue curing invented in 1860s making alkaline smoke more acidic and palatable (inhalable)

68-70—Camel cigarettes, Burley tobacco and sugar “sauces” tobacco

Sugar Research Foundation Report of 1950—confirmed role sugar had in explosive growth of tobacco industry, the more sugar the more cigarettes accepted mainstream

### **Chpt. 4: A Peculiar Evil**

72—resilience of the sugar industry despite tough times (like Great Depression), increasing consumption of sugar in the 20<sup>th</sup> century

Sugar Industry history

75-78—vending machines, WWII and Coca-Cola/Pepsi, canned breakfast juices

79-82—Dried cereal industry, Kellogg, Post originally health food!

Growth of sugared cereal industry

### **Chpt. 5: Early (Bad) Science**

84—early 20<sup>th</sup> c. medical journals blamed sugar for growth of diabetes

85—modern science of nutrition did not progress with new technologies

--1860 calorimeter led to 90 yr. focus on nutrition in terms of energy balance rather than on hormones and internal secretions, not until 1960 when radioimmunoassay was invented, affected how we interpreted risk of sugar consumption

89--Early scientific study, Europeans not Americans pioneered study of diabetes and obesity, early signs pointing to sugar, 1670, 1715.

91—ability of sugar to put on fat (early observation)

92—early science of sugar as nutrient, good for soldiers and athletes

96—Saccharine discovered

97-100—Allen's early diabetes research focused on sugar carbohydrates (refined grains + sugar)

100—Joslin influential figure, argued sugar not the cause of diabetes (he was a physician, not a scientist), all carbohydrates the same, he blames diabetes epidemic on obesity and diet rich in fat.

--fat to blame, not sugar,

104—Himsworth (scientist) based conclusions on false assumption that sugar and other carbohydrates are equivalent in their chemical composition and thus their effect on the body.

106—by 1971 subject of sugar as cause of diabetes had vanished.

## **Chpt. 6: The Gift That Keeps Giving**

107-8—Two misconceived ideas from nutrition science shaped our judgment about what constitutes a healthy diet

1—fat causes chronic diseases like diabetes, obesity, heart disease

2—we get obese or overweight because we take in more calories than we expend (energy-balance logic)

Energy-balance logic and the idea that “a calorie is a calorie” is THE “gift that keeps giving” to the sugar industry, ultimate defense for sugar

111-7—history of energy balance idea and questions to it

118—What insulin does, most lipogenic (fat-forming) hormone

--type 2 diabetes not a disease of insulin deficiency, but insulin resistance preceded (caused?) by an excess of insulin in circulation

120—hyper-insulinemia, too much insulin, research battle on what causes obesity

122—shocking 2015 Global Energy Balance Network (funded by Coca-Cola) to promote faulty energy-balance theory

## **Chpt. 7: Big Sugar**

124—techniques to use obfuscating research and generate doubt of science to market misinformation and promote product

--dental signal, cavities (caries)

--attach on artificial sweeteners, 1970 ban of cyclamates, near ban of saccharine 1972.

## **Chpt. 8: Defending Sugar**

145—1960s war on sugar countered and won by sugar industry in 1970s, thus shaping public opinion and government regulation for next 25 years leading to the greatest increase in sugar intake in the last half century—chpt. explains how this turn of events happened

155-164—Cleave & Yudkin research pointing to sugar as culprit, Campbells research in immigrant and native populations

164—Ameal Keys 1962 growth of dietary fat hypothesis

171—Food and Nutritional Advisory Committee, Fred Stone, Harvard 173-4 88 pg White Paper “Sugar in the Diet of Man” 1975, 25K copies sent to doctors and press, Stone’s conflict of interest

176-84—FDA 1977 Review document from GRAS Review, “Sugar is safe!” Ads, 1986 FDA reassessment became official govt. position on sugar: fat (not sugar) is the root of dietary evils

## **Chpt. 9: What They Didn't Know**

Chapter on the scientific method and the science of sugar/nutrition research

--history of pitfalls of nutrition science

188—requirements of public health policy and good science can be mutually exclusive

192—sucrose burned by muscles while fructose processed by liver (triglycerides, lipogenic)

196—glycemic index—how quickly foods digest into component carbohydrates: fructose does not register on the index! Makes sugar/fructose look good! Ideal sweetener for diabetics!???

This misperception explains the rise in total caloric-sweetener consumption in last part of 20<sup>th</sup> century.

197—High Fructose Corn syrup

199—late 80s science shifting to understanding “metabolic syndrome” and insulin resistance as major risk factors—homeostatic disruption, regulatory system misbehaving

201—Reaven researcher on metabolic syndrome, hyper insulinemia

--vicious cycle: too much insulin → insulin resistance; insulin resistance → secretion of more insulin = diseases

202—Key factors of metabolic syndrome

What causes insulin resistance?—fructose!!!

209—Sugar the cause of insulin resistance? Most likely. Can't say for 100% sure but it is a greater leap of faith to assume sugar is harmless

## **Chapter 10: IF/THEN Problem I**

210—Case study of Pima Indians, detailed picture of diabetes' epidemic growth

--vicious cycle of insulin resistance being passed on, inherited

223—IF sugar does cause insulin resistance AND it gets passed on or inherited, THEN epidemics of obesity and diabetes may be pre-ordained.

There may be no going back!? –a gloomy, stark prospect

It is unknown whether this negative cycle can be broken.

## **Chapter 11: IF/THEN Problem II**

225—history of growth of western diseases, Trowell and Burkett

--research in Kenya, westernization of “pre-modern” cultures

233—case of Tokelan people (South Pacific) TIMS—long term (longitudinal) study

237—IF insulin resistance and metabolic syndrome are caused by the sugars we consume, THEN so are to some extent all the other diseases. Without these sugars, western chronic diseases would be rare.

238-45—Focus on Gout  
245-53—Focus on hypertension, heart disease, kidney disease  
253-263—Focus on cancer, link between cancer and insulin resistance  
263-268—Focus on dementia/Alzheimers, amyloid plaques and insulin  
268-270—Focus on microbiome, emerging science, new and less well known  
271—Science and scientific standards? true and sufficient

### **Epilogue: How Little Is Still Too Much?**

273—How little is too much? Impossible to say, tautologies circular logic  
moderation may also not work because of IF/THEN problem 1  
274—Comparison argument to smoking—how much smoking is too much?  
275—This question has to account for sugar’s addictive qualities: if consuming sugar is a  
slippery slope [toward addiction], then advocating moderation is not a meaningful concept  
[analogy—an alcoholic can never drink in moderation]  
278—Our consumption of sugar over centuries may have changed the species, our  
response today may be vastly different to sugar consumption by people centuries ago  
279—Can we ever go back?  
Also, if we change our diet, can we know for SURE what caused health improvements?  
280—Artificial sweeteners muddy the waters—do these cause metabolic syndrome?  
Maybe?  
281-- Artificial sweeteners can help you get off sugar but we don’t know the effects of their  
extended use  
Ultimately, question of how much is too much is a personal question/decision  
282—Enough evidence exists to argue sugar is a toxic substance  
Ends with comparison to smoker who quits—can’t imagine not smoking, but after stopping  
for a while they can’t imagine going back. It may be the same with sugar.