CHAPTER 4

Disease Prevention with a Plant-based Lifestyle

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1 Introduction

Animal experiments are commonly conducted to understand human diseases and responses to treatment. As decades of research indicate, the use of non-human animals (hereinafter referred to as animals) to translate the side effects, benefits, and impact of medications and treatments on the human body has been demonstrated to be ineffective; while billions of animals *and* humans have suffered (Shanks, Greek and Greek, 2009). Due to misleading safety and efficacy data from animal experiments, humans are often prescribed medications that may not be as effective or as safe as the patient, or even physician, may have been led to believe (Akhtar, 2015).

In the United States alone, over 820,000 animals were used for research in 2016. This number does not include many species, including mice, rats and aquatic animals, under the Animal Welfare Act (United States Department of Agriculture, USDA, 2017). It is estimated that up to 100 million mice and rats are used for research purposes in the US each year (Carbone, 2004). A number of species of farm animals are also used in research for the purpose of enhancing the agricultural industry. However, from an ethical standpoint, experimenting on animals subjects them to cruelty, costs billions of dollars a year, and often does not provide sufficient results to ensure human safety (Akhtar, 2015). A major reason that animal studies are ineffective is that human bodies are very different physiologically from other animals, including the way we develop diseases and how we absorb nutrients. Many advances have been made to create alternatives to animal testing, which are being adopted by scientists interested in innovative methods in research; and, yet, the use of animals for therapeutic testing is on the rise. To attain more accurate data regarding human health, there are no substitutes for human population- and clinical studies, particularly for lifestyle-related diseases, which may not be relevant to non-humans. This chapter addresses how we can make decisions towards disease *prevention* and reduce the demand for prescription drugs and, in turn, reduce animal research and testing, through the adoption of a whole foods, plant-based diet, which has

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demonstrated to minimize and, in some cases reverse, lifestyle-related disease. The chapter focuses on conditions that can be preventable, where medication is avoidable, as opposed to conditions that require management with medical intervention.

2 The Unwanted Effects of Prescription Drugs

The use of medications to treat human diseases, while often a necessity, can also lead to a range of complications. About 4.5 million outpatient and emergency visits occur in the US each year for adverse drug reactions (Sarkar et al., 2011). Of those who are hospitalized, an additional 840,000 patients are given drugs that cause serious adverse reactions during their hospital stay (Light, 2014). In total, about 2.74 million Americans are impacted by complications from prescription drugs each year, and this does not account for the impact of over-the-counter medications (Light, 2014). Even proper use of prescription drugs may lead to death. The European Commission estimates that adverse reactions from prescription drugs cause almost 200,000 deaths a year in Europe (Light, 2014). In the US, an average of 128,000 deaths occur from properly prescribed medications annually. Combined, around 328,000 patients, in the US and Europe, die from properly prescribed prescription drugs each year (Light, 2014).

The global rise in chronic diseases has resulted in an increase in the research, development, and testing of prescription medication to address and stabilize conditions, such as type 2 diabetes, cancer, and heart disease. The Centers for Disease Control and Prevention (CDC) describes chronic diseases and conditions (e.g., heart disease, stroke, cancer, type 2 diabetes, obesity, and arthritis), among the most common, costly, and often *preventable* health issues in the US (CDC, 2017a). The rise in new prescription drugs on the market and increased consumption, due to an increase in lifestyle-related diseases, has resulted in an increase in animal research and testing. For example, according to the US Food and Drug Administration (FDA), new treatments are studied on laboratory animals to first determine potential toxicity before they can be tried on humans (FDA, 2014). These experiments identify side effects and the impact of medications on animals, but do not produce a complete or accurate translation of the medication's function and reaction in humans, including their effectiveness, toxicity, and side effects. Many people with chronic diseases take prescription drugs to better manage their conditions and achieve a better quality of life, although prescription drugs, especially for chronic conditions, often do not cure diseases or address their root causes. Prescription drugs are typically intended to alleviate symptoms or slow the advancement of a disease, and they may