



## Blood-Type Diet Not Supported by Research

In 1997, Dr. Peter D'Adamo wrote *Eat Right for Your Type*, a book that claimed that an ideal diet and an ideal exercise program can be devised for every person based on their ABO blood type. The thesis of the book is that by adhering to the blood-type program you can lose weight, slow the aging process, and prevent common diseases such as heart disease, diabetes, and cancer. In the ensuing 21 years, *Eat Right for Your Type* has sold 7 million copies in more than 60 languages. In addition, D'Adamo has developed a line of nutritional supplements, with specific recommendations for each of the 4 ABO blood types.

In 1998, I was asked by the *Journal of Alternative and Complementary Medicine* to write a book review of *Eat Right for Your Type*. In the review, I concluded that the hypotheses upon which the blood-type diet was based were implausible, and that the clinical improvements observed in case reports may have had nothing to do with blood type.<sup>1</sup>

D'Adamo's thesis is based in part on the fact that substances called lectins are present in many common foods. Lectins bind to simple and complex carbohydrates *in vitro* and behave somewhat like antibodies. Specific lectins can agglutinate the erythrocytes of certain blood types, and can also exert a wide range of other biological effects *in vitro*. According to D'Adamo, different lectins have an affinity for different cell-surface components. Therefore, individuals with a certain blood type might be adversely affected by specific lectins, whereas people with a different blood type might react to other lectins. If that is true, then people might be able to improve their health by avoiding foods that contain incompatible lectins.

However, the lectin hypothesis has serious weaknesses. First, the ABO system is only one of more than 30 different cell-surface markers that have been identified on erythrocytes. A diet based on one of these blood-typing systems might be completely different than a diet based on another set of

cell-surface markers. Second, research on lectins is still in its infancy, and nearly all of it has been done *in vitro*. It is not clear to what extent food-derived lectins are absorbed, or to what extent they are destroyed by cooking and by digestive enzymes. Moreover, little is known about whether absorbed lectins have any measurable effect *in vivo*, let alone different effects in different people. As I argued in my book review, D'Adamo did not adequately explain how he arrived at his detailed lectin-related dietary recommendations. What little explanation he did provide appeared in some instances to be based on unwarranted extrapolations or misunderstandings of biochemistry and immunology.<sup>1</sup>

The other main rationale for the development of the blood-type diet is that particular ABO blood types are more susceptible or less susceptible to certain diseases such as peptic ulcer, gastric cancer, and diabetes. Based on these differences in disease susceptibility, D'Adamo constructed a "metabolic profile" for each blood type, from which specific dietary recommendations were developed. However, this approach appears to reflect a gross oversimplification of the evidence, as well as a number of unwarranted extrapolations. For example, type O individuals are known to have a slightly higher incidence of peptic ulcer than other groups. Seemingly from this observation, D'Adamo concluded that type Os make too much stomach acid and are therefore evolutionarily designed to eat animal protein (which requires gastric acid for digestion). However, there is no apparent reason to assume that type O individuals *without* peptic ulcer have high stomach acid and should therefore consume large amounts of animal protein. Studies that have looked at gastric acid production as a function of blood type have yielded conflicting results,<sup>2</sup> and some type O individuals have been found to be achlorhydric (i.e., they produce no stomach acid).

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## Editorial

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It is not surprising that many people who follow the blood-type diet experience various improvements in their health. Every one of the four diets recommends the avoidance of refined sugar and processed foods. In addition, three of the most frequently allergenic foods – wheat, corn, and dairy products – are restricted (3 of the 4 diets prohibit wheat, 3 prohibit corn, and 1 prohibits dairy products). Whether the beneficial effects of these diets have anything to do with a person's blood type has not been subjected to scientific scrutiny until recently.

In a new study, 919 overweight individuals (mean age, 44.6 years, mean body mass index [BMI], 32.5 kg/m<sup>2</sup>) who were participating in the Toronto Healthy Diet Study were randomly assigned to consume a diet based on Health Canada's Food Guide or a diet consistent with Dietary Approaches to Stop Hypertension (DASH) and the dietary portfolio principle. Dietary intakes at baseline and at six months were assessed by a one-month food-frequency questionnaire. Diet scores were calculated to determine relative adherence to each of the four blood-type diets. Greater adherence to any of the four blood-type diets was associated with significant improvement in one or more of the following: blood pressure, waist circumference, or body mass index. However, these improvements occurred independently of whether the diet did or did not conform to the person's blood type.<sup>3</sup> These findings suggest that the benefits of the blood-type diets are due to the nonspecific effects of avoiding sugar, junk food, and common allergens, and that the improvements have nothing to do with a person's blood type.

One might argue that the blood-type diet, although of questionable scientific validity, is not harmful, and that it does provide a method by which people can improve their health. However, there are potential downsides as well. First, individuals with type O blood (more than 40% of the population) are advised to consume large amounts of animal food. While the potential deleterious effect of such a diet has been the topic of ongoing debate, there is no question that some people fare best on a vegetarian diet. Second, the restriction of specific foods (such as cruciferous vegetables, lentils, sesame seeds, and buckwheat) on various blood-type diets can be a source of unnecessary inconvenience and deprives people of the benefits of these healthful foods. Finally, there is the philosophical question of whether the positive results obtained with the blood-type diet adversely affect society by providing pseudo-validation of illogical thinking.

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### References

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3. Wang J, et al. ABO genotype does not modify the association between the "blood-type" diet and biomarkers of cardiometabolic disease in overweight adults. *J Nutr*. 2018;148:518-525.

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