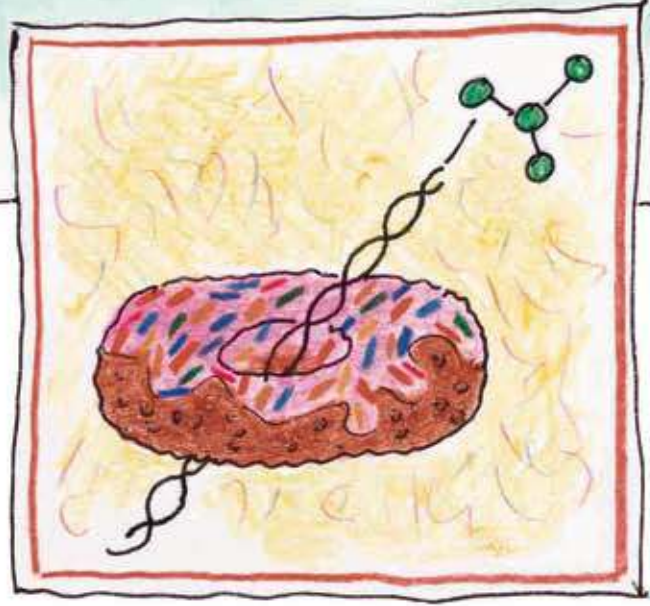
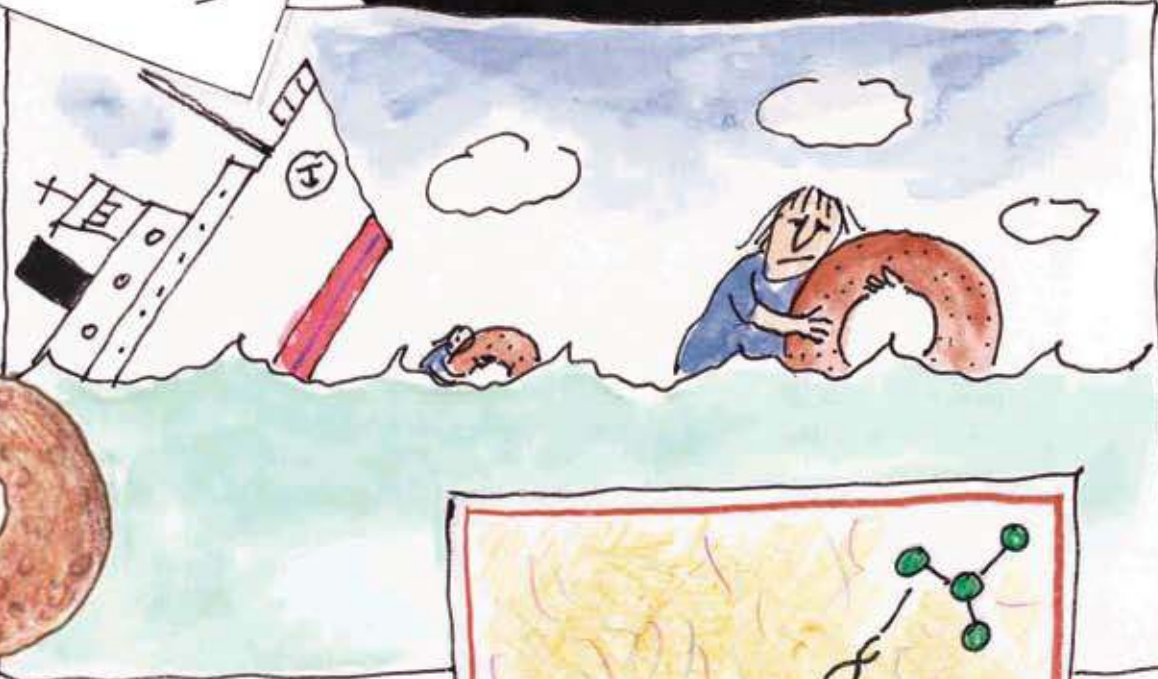


Sugar Roll, M.D.
1 Glazed Way
Dunkin, CA

Sig: VI chocolate
glazed p.o. 8 a.m
Disp 2 dozen
refills: 24
Sugar Roll (MI)

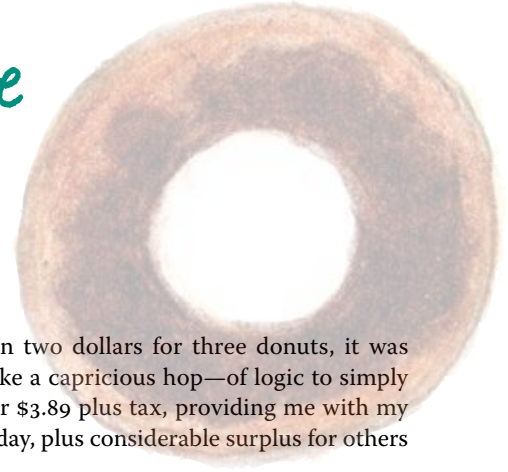


50% OFF



JM

The universal efficacy of the generic glazed donut



Phil Granchi

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In a tangle of emotion typical of my species, I felt both validation and indignation when I arrived at the Jefferson Memorial Hospital Emergency Department carrying a shopping bag full of my favorite non-FDA-approved pharmacopoeia.

"You've been watching *E.R.*, huh?" said the charge nurse who watched me unpack my wares.

"Actually, no," I replied defensively, wrenching a smile from my assaulted pretense of medical discovery, while inwardly bristling at the implication that I had purloined therapeutic options from a television show I didn't even have time to watch. "Although I heard about that episode."

My morning medications quickly provided the anticipated lift to the morning, and their efficacy requires that I make every attempt to facilitate their use by others who devote their lives to the healing arts. Not only does the oath of my intended profession necessitate the furtherance of such learning, but an entire pantheon of elementary school teachers have demanded that I also behave with such courtesy.

I therefore outline the proper indications, dosage, and administration of warm, fresh donuts.

The efficacy of such bakery infusions has apparently been independently identified by the writers and producers of *E.R.*, and has previously provided subject material for the show. In one particular episode, which I still do not have time to watch, I am told that a resident physician enlists the dedicated assistance of the nurses by providing them with a box of donuts at the beginning of his shift. The nurse in my real-life ER assumed that I had seen the program and was attempting to likewise endear myself to her and her coworkers.

My earliest experimentation with medicinal donuts, however, goes back to the years I worked as a freelance graphic artist in Chicago. With no formal medical education at that time, my initial advances in the field were due to the proximity of donut franchises to the street exits of Chicago's subway system. Running late on most days for jobs in downtown office buildings, with nothing more than fossilized carrots and ketchup packets in my refrigerator at home, the Dunkin' Donuts on Chicago Avenue just east of State Street was the most logical source for breakfast.

The pricing of single donuts versus a dozen provided the next serendipitous hairpin turn along my path of discovery.

At a cost of more than two dollars for three donuts, it was no great leap—more like a capricious hop—of logic to simply buy an entire dozen for \$3.89 plus tax, providing me with my complete need for the day, plus considerable surplus for others in the office.

Entirely unexpectedly, and within just weeks of the onset of these occasional purchases, the graphic studio in which I worked became the social center of the agency. Account executives who normally avoided the wild hair and generously body-pierced atmosphere of the studio stuck their heads in the door to remind us of the day's deadlines—not failing to depart with a cruller in hand. Copywriters who never left their cubicles found time to discuss the nuance of a particular tagline while casually reaching for a glazed with pink icing and multicolored sprinkles. It would, however, be unfair of me to say that these visits were entirely mercenary. I invariably learned that these were interesting and intelligent people, funny and engaging in their own right, despite their dabbling in such mysteries as market segment and focus groups. This early phase in my work with donuts led me to suspect that the presence of donuts in the studio was at least contributory to the unexpected warmth and camaraderie.

In my third year of medical school, I at last sought to corroborate my observations through review of the medical literature.

Sadly, a PubMed search for "donuts" revealed a mere 26 references, and most of these contained the predictably narrow view that donuts as a foodstuff are bad for you. Amy F. Subar and her colleagues specifically cite donuts as a "low nutrient-dense food" that serve as a major contributor of energy, fats, and carbohydrate in children's diets, but make no mention of them as a possible treatment option.¹ W. M. Ratnayake and coworkers similarly provide data on the fat content of donuts (16.6 to 29.6 percent) but, again, offer no hints that deep fried rings of dough encrusted with sugar have a definitive place in our medical armamentarium.² Recalling the Pharmacology day 1 lesson that digitalis is a poison in high doses yet therapeutic with controlled use, I persisted.

But "donuts (and) well-being" in the PubMed subject line returned no references. Attempting to expand the terminology also proved disappointing with "toroid (and) pastry" returning not a single abstract. Recalling that donut analogues may be created by slathering bagels in fruit-flavored cream cheese, I tried "bagel (and) hyperplasia" to no avail—although "bagel (and) mutagenesis" revealed an article on the organization of cell cycle regulation genes in *Caulobacter crescentus*,³ which, after further review, sadly, did not seem relevant to my hypothesis.

Nearing ultimate frustration, I finally attempted the word

“donut” in its singular form. Here at last my efforts were rewarded. After a quick glance at the 103 items returned in the search results, however, I felt the creeping revelation that my own view of donuts was in fact quite limited. By focusing on the *consumable* variety of donuts, I had missed the broader expression of donuts in the physical world. In fact, I was suddenly rewarded with evidence that the donut is in fact *universal*.

Not only did I learn that the donut, at least in form, provides a substrate upon which life itself continues, I also found that its characteristic shape recurs at multiple levels of organization within our bodies. At the level of gross anatomy, a donut-shaped mass of Type I collagen has been found to constitute a portion of the anulus fibrosis.⁴ In this context, the donut appears to provide structural integrity to our spinal column, helping to form the foundation by which humans assume an upright stance and bipedal gait. Without such collagenous reinforcement, our species might well still be sniffing through the leaves and twigs deposited on primitive forest floors, hapless quadrupeds confined forever to the surface of the earth.

More deeply, at the level of protein structure, the donut topology has been identified in reconstructions of the regulatory domain of protein kinase C.⁵ These data suggest that donuts are important components in the control of phosphorylation reactions. As such, they serve as fundamental gatekeepers that underlie the broader control of physiological processes. Such data may eventually help overturn the donut’s former association with disorder and inactivity, since it seems the donut lies near the center of our highly-ordered, continuously-teeming cellular metabolism.

Still closer to the core of life, a donut-like structure has been observed in the alpha dimer of human topoisomerase.⁶ Images obtained during this study are reportedly consistent with a model for topoisomerase II in which a DNA strand is passed through a pore during preparation for replication. Extrapolation of this finding suggests that the basis of our human existence—our genetic heritage that helps shape all that we are—must, from the moment of our inception and throughout the ongoing growth and development that spans our entire lives, pass through the center of a donut in order to be duplicated.

A skeptic might dismiss these findings as mere topological coincidence, but evidence far beneath the biological level of organization suggests that the donut motif underlies the deepest origin of our existence.

In his book, *The Elegant Universe*, physicist Brian Greene discusses the nature of superstring theory.⁷ Also known as M theory, this relatively new realm of physics proposes that the primary substrate of matter may be described as infinitesimal one-dimensional strings whose properties allow for the peaceful union of general relativity and quantum field theory. Key to the development of this theory is the hypothetical existence of additional dimensions beyond our known everyday three dimensions of space. Because these dimensions remain tightly curled up far beneath the scale of the atom, however, they cannot be seen nor experienced with our current level of technology. Attempts to

understand these hidden dimensions have led to postulation of a variety of complex shapes—Calabi-Yau shapes—that model how the extra dimensions might look and behave in their curled-up state. Greene emphasizes at the outset of this discussion that “a typical Calabi-Yau shape contains *holes* that are analogous to those found at the center of a phonograph record, or a doughnut,”* or, more intriguingly, a “multidoughnut.”

Greene goes on to explain the profound sense of achievement he and his colleagues felt when string theory arrived at the proposition that—in a small subset of these shapes—it is the number of holes in these “multidoughnuts” that determines the number of families of elementary atomic particles that will exist in any given universe. In our world, this number is three. If string theory continues to advance and can be experimentally tested, we may have to accept that not only our physiological processes, but all that we can see and experience in the physical world, depends on the odd mathematics surrounding a three-holed donut.

Apart from these concepts, what physicists do seem to agree upon is that beneath the level of the smallest known structures, familiar notions of geometry, space, and reason dissolve into a violent, twisted sea of quantum fluctuation. With the simple donut as evidence for recurrent phenomena at multiple levels of existence, it is not a stretch to say that our macroscopic existence may similarly mirror the raging quantum chaos that underlies the farthest depths of our physical being. All creeds, mythologies, and secular movements aside, we find ourselves in a world with a seemingly random distribution of intermittent joy suffused with violence and suffering that seems beyond reason.

Traditionally, compassion has been a tool by which health care workers got through careers that spanned decades and allowed them to retire with at least a subjective sense of satisfaction. As a nontraditional student, however, I have seen the consequences of long-term compassion. During nine years of part-time volunteer work at an overnight emergency shelter for the homeless in Chicago, I have seen glowing, young, idealistic volunteers reduced to jaded social technicians by the physical and emotional stresses of working long hours in an underfunded, understaffed system. Pulling no punches on the matter, I cannot safely exclude myself from those who have, at least temporarily, undergone this transformation.

I am not suggesting that we abandon compassion. It stays in its right place in the depth of our commitment. Rather, I propose we nudge the paradigm to wedge in something we can all live and work with at the start of each day, something that can keep us all answering our pagers for few extra decades. The surging tide of complementary medicine usage in the United States may provide a clue.⁸ If one disregards the vitamin fillers, testimonials, and the occasional shadowy credentials of practitioners, some good solid therapy exists in

*Greene uses the more formal spelling of the pastry: “doughnut.” PubMed search using this spelling revealed an equally staggering body of work in which the “doughnut” is found as a component bio-

this world of alternative medicine. In my own practice of yoga, for example, attempting to do the pose *perfectly* at 5:30 in the morning—as all once and future medical students might—I have often been reminded that it is far better to simply start the day with a sense of my own well-being.

For me, this fragile state may be obtained in the early hours of the morning with a cup of coffee and a donut. And although I am unlikely to receive funding for a randomized controlled trial, I continue to gather anecdotal evidence that an entire dozen donuts available for consumption also provides others with a similar sense of comfort. My ongoing experience repeatedly suggests that a good dose of donuts helps people feel cared for, at least remembered, and perhaps that their own well-being is being considered in the grind of the working world.

Besides, one needs to look just beyond the edge of medicine to see that donuts have been seamlessly woven into the fabric of life in other stressful occupations. Jokes about cops and donuts were probably around for generations before the age of antibiotics, yet their consumption at all hours of the day by the law-enforcement community suggests a highly-ordered and deeply traditional usage that transcends mere physical appetite. In the context of my earlier discussion, the donut may provide our nation's finest with the fuel, perhaps even the armor, with which to keep our cities safe.

Meanwhile, in the maritime world, the donut remains the universal symbol of rescue and, in fact, is synonymous with the saving of lives. Swept overboard in a Category 5 hurricane, surrounded by mountainous waves in the middle of the night, it is the humble donut that is tossed in your direction, to which you will cling with beaming hope that all will be well again. It is this same donut, perhaps a slightly more colorful plastic version, that accompanied many of us out over the terrifying depths during our earliest aquatic adventures in neighborhood swimming pools. Even further along this benevolent trajectory, it is this same shape, though in miniature and imbued with peppermint, that has been reached for by countless millions of adolescents, trembling beneath the purple dusk of a summer night with the aching potential for a first yet timeless kiss. By whatever names, sizes, colors, and composition, it is the essential donut shape that we have learned to trust.

With such a pedigree for order and stability, with such far-reaching cultural identification with safety and comfort, I want to ensure that these simple yet widely maligned comestibles are properly, and quickly, adopted for use by the medical community.

Therefore, to help prevent confusion, I offer this package insert on their distribution: Donuts are best administered approximately once a month, by the dozen and in as many varieties as may be available. Any fewer, and with too few choices, and they will not properly titrate to the therapeutic level. More than a dozen and a half at each usage creates the risk of overdose. Donuts may be divided into partial doses, a practice recommended because it allows individuals the opportunity to have a Bavarian Cream *and* an apple fritter without too much guilt. Donuts are contraindicated in emergency attempts to

repair damage inflicted by recent insults to others; 48 hours of prophylactic groveling is recommended before donuts may be safely offered in peace. Above all, DONUTS SHOULD BE FRESH. This Black Box warning is added to ensure that debt-laden medical students and residents do not purchase pastries from a day-old bakery shop with bright-orange “50% OFF” stickers on the box. For unknown reasons, these potentially harmful donuts simply do not effect the required sense of well-being.

Of course, yoga purists will probably confiscate my mat for preaching the benefits of fried foods. And my own wife has encouraged me to eschew the fundamental elements of flour, sugar, and lard completely, and to consider leaving baskets of perfumed soaps and hand lotions for the allied medical staff. I leave it to other clinicians to help silence these skeptics by attempting their own studies in donut therapy.

With research proceeding at multiple sites, ripples in the fabric of space-time may slowly emanate from hospitals and clinics in the caffeine-drenched hours of the morning. Merging together, we may hope that these ripples will briefly bring order to the turbulent quantum sea. Then, as the waves continue, in another thousand years, physicians might face a world in which suffering might truly be diminished.

References

1. Subar AF, Krebs-Smith SM, Cook A, Kahle LL. Dietary sources of nutrients among US children, 1989–1991. *Pediatrics* 1998; 102 (4 Pt 1): 913–23.
2. Ratnayake WM, Hollywood R, O'Grady E, Pelletier G. Fatty acids in some common food items in Canada. *J Am Coll Nutr* 1993; 12: 651–60.
3. Ohta N, Ninfa AJ, Allaire A, et al. Identification, characterization, and chromosomal organization of cell division cycle genes in *Caulobacter crescentus*. *J Bacteriol* 1997; 179: 2169–80.
4. Schollmeier G, Lahr-Eigen R, Lewandrowski KU. Observations on fiber-forming collagens in the annulus fibrosus. *Spine* 2000; 25: 2736–41.
5. Solodukhin AS, Caldwell HL, Sando JJ, Kretsinger RH. Two-dimensional crystal structures of protein kinase C-delta, its regulatory domain, and the enzyme complexed with myelin basic protein. *Biophys J* 2002; 82: 2700–08.
6. Nettikadan SR, Furbee CS, Muller MT, Takeyasu K. Molecular structure of human topoisomerase II alpha revealed by atomic force microscopy. *J Electron Microscop (Tokyo)* 1998; 47: 671–74.
7. Greene, Brian. *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory*. New York: Vintage Books; 2003.
8. *The Use of Complementary and Alternative Medicine in the United States*. National Center for Complementary and Alternative Medicine, National Institutes of Health. nccam.nih.gov/news/cam-survey_fs1.htm.

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