

Quackery

How do you take your coffee?

Many claims regarding the therapeutic benefits of diet and detoxification in the treatment of cancer are well publicised. Two of the most popular approaches are those of Dr Max Gerson and Dr Nicholas Gonzalez, which involve excess nutrient uptake followed by detoxification with coffee enemas. These treatment regimens are commonly prescribed, despite the absence of rigorous peer-reviewed preclinical studies or randomised controlled trials (RCTs). Proponents of these therapies have made attractive and impressive claims regarding their success treating various cancers, but does the science back them up?

The Gerson and Gonzalez therapies are based on the underlying theory that cancer develops in response to the accumulation of toxins in the body. Both of these alternative treatment regimens consist of hyperalimentation (excessive nutrient uptake) followed by detoxification to correct physiological imbalances, stimulate metabolic processes, promote self-healing, and assist the body's natural ability to kill tumours.^{1,2} Both therapies include intake of pancreatic enzymes, on the basis of the hypothesis that patients with cancer are deficient in these enzymes, and nutritional supplementation is necessary to facilitate proper protein digestion while destroying defective cells.^{2,3}

Although epidemiological evidence suggests that certain dietary modifications might be associated with reduced cancer risk, no RCTs of diet-related factors have conclusively shown the efficacy of these treatments as either preventative or curative measures.⁴ There exists scarce scientific evidence that nutritional interventions, especially on their own, can successfully be used to treat cancers and extend survival after diagnosis. For instance, Baldwin and colleagues reviewed 126 studies published from 1981 to 2010, 13 of which were RCTs (1414 patients), comparing the efficacy of oral nutritional intervention plus chemotherapy, radiotherapy, or surgery versus standard of care.⁵ These interventions had no effect on survival after the diagnosis of cancer, except in patients susceptible to undernutrition following surgeries of the head and neck or digestive system. Thus, although certain dietary interventions might improve quality of life and promote survival in patients with undernutrition, no study has shown any direct anticancer properties of nutritional interventions, despite substantial efforts to investigate this hypothesis.

In addition to the dietary component, both Gerson and Gonzalez therapies use coffee enemas to supposedly facilitate the liver's ability to eliminate unspecified toxins, which might be released from tumours and damaged tissues from the bloodstream.^{1,3} The rationale for detoxification stems from the concept of auto-intoxication, or the state

of being poisoned by toxic substances produced within the body. The Gerson Institute also suggests that toxins from improper dietary sources accumulate in bodily tissues over time, poisoning the liver unless they are cleared.¹ Administration of coffee enemas is believed to take effect as the caffeine travels directly through the haemorrhoidal vein into the liver portal vein, causing the dilation of bile ducts and excretion of toxic breakdown products through the colon wall.

Revealingly, the diagnosis of auto-intoxication was discarded by the medical community almost 100 years ago when advances in science did not support this hypothesis.⁶ By contrast, various studies suggest that acute and long-term oral coffee intake increases various measures of plasma antioxidant capacity and might be protective against DNA damage in certain tissues.⁷ Scarce scientific evidence also suggests that the non-caffeine components of coffee, such as diterpenoids, might naturally slow the progression of certain cancers.⁸ Although this rather nascent line of inquiry appears to support the detoxification potential of coffee, colonic administration of coffee is counterintuitive to the scientific principles of its therapeutic effects. Coffee delivery via enema is supposedly superior to oral delivery for three reasons: caffeine more efficiently dilates bile ducts to improve bile flow; colonic absorption of diterpenoids more efficiently increases detoxifying liver enzymes; and toxins are dialysed from the blood supply into the enema across the gut wall and are prevented from re-entering the bloodstream because of the frequency of these enemas.¹

First, the maximum serum concentration (maxC) and area under the curve (AUC) of caffeine was far greater following oral consumption than after coffee enema in a crossover study consisting of the same patients consuming coffee via both routes at different times.⁹ Unlike the complete



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For a full reference list see Online for appendix

For more on the **Gerson therapy** see <https://gerson.org/>

For more on the **Gonzalez therapy** see <https://www.dr-gonzalez.com/treatment.htm>

For more on **Gerson coffee enemas** see https://gerson.org/pdfs/How_Coffee_Enemas_Work.pdf and <https://thegonzalezprotocol.com/videos/why-detox-with-coffee-enemas/>

For more on **survival in patients with melanoma** see <https://www.cancer.org/cancer/melanoma-skin-cancer/detection-diagnosis-staging/survival-rates-for-melanoma-skin-cancer-by-stage.html>

bioavailability of orally consumed caffeine,¹⁰ coffee enemas partially bypass drug distribution to the liver via the portal vein and present a less efficient method of delivery.¹¹ Additionally, both decaffeinated and caffeinated coffee were each found to decrease gallbladder volume three times more than saline,¹² suggesting caffeine is not the only component of coffee controlling bile flow.

Second, patients with ileostomies absorb 90% of diterpenoids such as cafestol and kahweol. This proportion suggests that the beneficial components of coffee are actually absorbed in the small intestine rather than the colon, where the majority of the coffee enema is located. Oral delivery of cafestol and kahweol is therefore more efficient than the colonic route.¹³

Third, once bile is secreted into the intestine and assists in fat emulsification, it is brought back into the body through enterohepatic recirculation. The vast majority of bile is reabsorbed in the terminal ileum;¹⁴ thus, an enema cannot prevent bile reabsorption to any appreciable extent. Tight junctions comprising the intestinal epithelial barrier also prevent simple diffusion of molecules across the gut wall in either direction.¹⁵ These data clearly show that the rationale of coffee enemas is not scientifically substantiated.

Coffee enemas have resulted in the death of two patients with cancer, who had fluid and electrolyte abnormalities.¹⁶ Enemas have also resulted in sepsis, coma, dehydration, colitis, and constipation.¹⁷ Many of these adverse reactions could be associated with both the dietary intervention or the enemas themselves. Direct effects of coffee enemas include severe rectal burns¹⁸ and rectal perforations.¹⁹ Such adverse effects are likely to cause severe complications in patients with cancer, who are often immunodeficient and have slow healing process.

Taken together, a holistic review of the scientific evidence shows the fallacies and dangers of replacing evidence-based medical treatment with alternative detoxification diets and regimens. Although The Gerson Institute alleges that "over 200 articles" published in the medical literature demonstrate the efficacy of this treatment,²⁰ this claim is misleading at best. A PubMed search with the search term "Gerson therapy" reveals eight publications, only two of which present original data. No clear evidence of efficacy was established by three separate analyses of patients claimed by the Gerson Institute to have benefitted from their therapy,²¹ and another review of six Gerson cases was uninformative because of confounding variables, such as concurrent therapies and scarce documentation.²²

We found only a single clinical trial published by the Gerson Research Organization (done in a hospital located in Tijuana, Mexico), which assessed 5-year survival of patients with melanoma.²³ The study claims that patients with stage 3 and stage 4 melanoma had superior overall survival compared with historical controls, and a 100% 5-year survival for patients with localised melanomas. Yet, the

study has numerous methodological errors that completely undermine its validity. Collection of patient data did not comply with the rigours of scientific data gathering and reporting for several reasons, including failure to record the pathological stage of melanoma at treatment initiation and uncertain compliance with the therapy regimen, just to name two problems. The 5-year survival of melanoma has improved considerably since 1995 when this study was done (92% for all SEER stages combined) because of innovative evidence-based treatments. Despite this clear and exciting medical progress, the Gerson Research Organization continues to claim there are no effective therapies for melanoma and deceptively suggests that their therapy is superior to standard of care.

In the same way, Dr Gonzalez presents 50 cases he considered to represent convincing evidence of the efficacy of his treatment regimen.²⁴ However, in a clinical trial initiated in 1998 to compare the administration of the Gonzalez therapy (n=32) versus standard gemcitabine therapy (n=23) in patients with pancreatic cancer, there was a three-fold median overall survival difference in favour of gemcitabine (4.3 months with Gonzalez therapy vs 14 months with gemcitabine) and the study was closed when the stopping-rule criterion was met in 2005.²⁵ The findings of this study suggest the unethical nature of treating progressing cancers with nutrition and detoxification alone, and further studies are unwarranted because the scientific advances gleaned from exposing patients to such trials are dubious at best. As Marcus and colleagues state,³ "Will another negative trial modify the practice of individuals who choose to ignore existing negative evidence and risk legal sanctions?"

Physicians who promote the Gerson and Gonzalez methods are either unaware so much scientific evidence exists or are intentionally blind to the evidence. These organisations oversell the benefits of their therapies; Gonzalez himself claimed a 75% success rate,²⁶ whereas the Gerson Institute and Gerson Research Organization still claim to have superior 5-year survival in melanoma.²³ Many thousands of patients with cancer have been exposed to clinical trials that have explored nutritional intervention and the detoxifying properties of coffee enemas.^{5,9} Not a single trial has shown any direct anticancer effect; instead, many studies actually suggest harm.^{16-19,25} Simply put, there is no convincing evidence in support of these practices. Patients will be relieved to note that oral consumption is the best method of delivery of the phenolic components of coffee that promote antioxidant activity and that coffee enemas (regardless of frequency) are diametrically opposed to the stated goals of those promoting their administration.

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