In answer to Dr. Green’s assertion that we *“are in effect endorsing the concept of purging,”* we apologize that neither of us is a student of fifth century medicine, and we are therefore unqualified to comment. However, modern literature suggests that Dr. Green may be overly hasty in his dismissal of *“purging,”* per se, as a superstition of the past. A number of credible contemporary authors9-14 have investigated gut lavage (iatrogenic diarrhea) as a means of detoxifying ingested poisons, reducing plasma endotoxins and other toxins already absorbed by the body, and increasing gastrocolic response to feeding, among other positive findings.

Above all, Dr. Green has levied criticism at our assertion that [coffee enemas](http://www.sawilsons.com/index.html), which have been observed to palliate cancer pain,5,6 may achieve this effect by stimulating detoxification through the glutathione (GSH) and glutathione-*S*-transferase (GST) mechanisms. Dr. Green was quite right to point out that GSH is not a precurser to bile salts. His sharp eye caught a transcription error in the published text of a taped lecture by one of us3 in which the words “bile solutes” were mistakenly typed as “bile salts.” But, it is a long leap Dr. Green takes from this specific and correct criticism to his fallacious assertion that *“large-scale elimination of poisons via the bile would be an inefficient means of detoxifying the liver since any detoxified poisons in the bile could be regenerated by intestinal enzymes, reabsorbed into the bloodstream, and recirculated through the body for long periods.”*

The disciplines devoted to study of hepatic transport are maturing rapidly. Modern tracer studies directly contradict Dr. Green’s assumption regarding the “recycling” of poisons. Goresky, et al,15 write regarding detoxification of a drug by the liver: *“A general principle has emerged. The charged conjugates penetrate the liver cell membrane poorly in relation to the parent drug. When a conjugate undergoing biliary excretion is formed within the liver cell, a retarded efflux of the product to plasma is therefore found and otherwise unexpectedly high cellular concentrations and intracellular residence times result. The effect of the prolonged sojourn time is to amplify the proportion of the generated metabolite excreted in bile...At an evolutionary level, it appears that the processing of foreign materials by conjugation in the liver is an adaptation that automatically promotes their biliary excretion.”*

Modern research reveals that the liver exports glutathione into both plasma and bile at a rate that accounts for nearly all of its biosynthesis, and that the biliary concentration of glutathione is close to that of the liver.16 Because GSH detoxifies genotoxic electrophiles poorly by spontaneous reaction, GST is a particularly important catalyst; their combined action leads to efficient detoxification.17

Listowsky18 writes: *“Glutathione-S-transferases, by virtue of their capacities to bind and, in some cases, catalyze biotransformations of substances such as hormones and chemicals coming from the environment (either toxic agents or drugs), can determine whether these compounds will function or be detoxified.”* The range of GST substrates is quite remarkable, including a large number of xenobiotics, hepatic toxins, carcinogens, as well as endogenous prostaglandins, leukotrienes, steroids, and organic hydroperoxides including lipid hydroperoxides and lipid peroxidation products.19

Dr. Green noted that phenobarbital and microsomal enzyme inducers cause increases in bile flow, “but nowhere in the scientific literature on this subject is there a reference to the idea that coffee will do this.” We hasten to point out that Dr. Green missed a description offered in *Healing* 6(3-4):38, 1990, of experiments conducted by one of us (Lechner) at the Landeskrankenhaus of Graz, Austria, in which cafestol derived from coffee was used to stimulate increased bile flow in rats. Instead, Dr. Green focused his attention and comments on a paragraph preceding this description by only ten lines of print. Had he read on, he would have known that these rat experiments are discussed in *Aktuelle Ernährungsmedizin* 20 *“In a small and as yet unpublished series of experiments, we were able to achieve a significant quantitative increase of bile flow in rats, by giving them cafestol which we produced by the method described in (Beilstein*21*).”*

Coles and Ketterer17 write: *“As more is known about human GSH transferases, it becomes apparent that information obtained with the rat is indeed relevant to man. The same multigene families are seen in both species, and there is considerable identity in primary structure across the two species.”* It was with similar convictions that our coffee and rat experiments were undertaken.

The furan moiety of cafestol diacetate is known to be a potent inducer of GST in the rodent liver and small bowel mucosa.22 Cafestol is one of two GST-inducing diterpene esters found in coffee.23 Coffee itself is known to induce GST, and when fed green as a food additive could enhance GST sixfold in the liver and sevenfold in the small bowel,24 a level which is considered *“quite remarkable”* by the National Research Council.25

Both cafestol and kahweol have two hydroxyl groups, and will form a diacetate, in which form they can be concentrated.

**Extraction of cafestol from beverage coffee**

The procedures by which we extracted cafestol from regular beverage coffee and used it to stimulate rat bile flow are described below:

1. A coffee solution was prepared in the usual manner for Gerson patients, by boiling in distilled water three heaping tablespoons of regular-grind, regular-roast, commercially available coffee. The solution was strained, not filtered. Following is a brief description of Beilstein’s21 procedure:

a. Soxhlet extraction with C2H5OH

b. Distill off ether in Rotavapor = **Coffee Oil**

c. Addition of petroleum ether/cooling to 4C = **Coffee crystals**

d. Neutralization of residue with Na2SO4(5%)

e. Addition of H2O2 and C2H5OH

f. Repeat soxhlet extraction with C2H5OH

g. Dry and evaporate the extract with Na2SO4

h. Addition of petroleum ether and cooling = **Cafestol diacetate**

By this process it was possible to extract almost exactly one gram of chemically pure cafestol diacetate from one liter of beverage coffee.

A comment is in order here: Dr. Green overstated his case by claiming that Lam, Sparnins and Wattenberg23 *“demonstrated that kahweol and cafestol, the palmitate constituents of green coffee beans, induced GST activity and that roasting destroyed most of this GST-stimulating activity.”* That is not what they reported, but rather, this: *“Roasted coffee and instant coffee were found to have a weaker inducing activity than did the green coffee beans studied, i.e., slightly less than 50% as much.”*23 These were feeding experiments in which the same amount of each material was mixed with animal chow. Larger amounts of the less potent inducers can make up the difference. Dr. Green also questioned the solubility of the esters in water when he claimed *“the roasted, ground coffee used in the Gerson* [*coffee enema*](http://www.sawilsons.com/index.html) *solutions cannot contain kahweol and cafestol.”* Our result shows that Dr. Green does his chemistry at his desk instead of taking it to the laboratory bench. That Lam did not extract either ester from green coffee beans with water may be due to the fact that they were green as opposed to roasted, or that he filtered the boiled coffee solution used in his experiments.26

2. A choledochocutaneous fistula was surgically created in 30 Wistar rats (avg. body weight 280 grams) so that the end of the common duct was implanted into the anterior abdominal wall like a sigmoidostomy. Miniature ostomy bags were created from condoms and adhered to the rats with skin paste supplied by Hollister, Inc.

3. Based on the consideration that the average human (70 kg) is given a [coffee enema](http://www.sawilsons.com/index.html) containing 1 gr. cafestol, the equivalent dosage for rats was set at 4 mg. Suppositories were made from white wax. Half were medicated with 4 mg cafestol extracted from beverage coffee as described above. Half were left unmedicated and given to the controls as placebos. There were fifteen rats in each group.

4. Bile flow was measured after eight hours. The average output of bile for the controls was 2.4 ml, whereas the average for the test animals was 3.1 ml., an increase of 28%. The difference is statistically significant.

These experiments provide grounds for speculation and further studies. But, as one of us has already written: *“However, the continuation of these investigations is beyond our scope and should be reserved for the pharmaceutical industry, together with a possible clinical test. As long as the substances under discussion, which in our view could make a highly effective drug for protecting the liver, are not produced industrially and no relevant studies are planned, we have to continue administering them in the awkward form of enemas. All the more so because patients cannot be expected to consume the therapeutically necessary daily amount of at least one litre of coffee by drinking it, without risking side effects in the upper alimentary tract.”*20

In unrelated animal experiments, Miller27 demonstrated that DMBA-induced buccal pouch tumors in hamsters could be markedly inhibited (35%) by either cafestol or kahweol administered as a dietary supplement. In earlier experiments by the same investigator, green coffee added to feed evoked even greater (90%) protection.28

**Treatment of cancer pain by** [**coffee enemas**](http://www.sawilsons.com/index.html)

Because cancer pain remains a problem, even with the development of better medications, we continue to focus on the benefits of [coffee enemas](http://www.sawilsons.com/index.html) specifically for cancer pain. Currently, we are conducting a prospective trial in advanced cancer pain control, comparing the need for pain medication in patients receiving only standard treatment (Group A) with those receiving standard treatment and a modified Gerson diet therapy with two [coffee enemas](http://www.sawilsons.com/index.html) per day (Group B). Patients, almost all with cancers of the breast, bowel, or pancreas, are matched for gender, age, weight, race and disease, including sites of primary tumor and metastases. The trial was begun in April of 1991.

Pain is assessed by the patient himself with a visual analog scale published in the cancer pain treatment guidelines of the World Health Organization.29-31 There are four stages of pain, each with its own set of medications. Verification of patient self-assessment is made by challenging his pain with the medications appropriate to his stage.

*Stage I pain.* To date, 42 test and 49 control patients have been evaluated. Patients at this level can be kept pain free with three doses per day of indomethacin 75 mg., diclofenac 100 mg., or paracetamol 500 mg. The test group has used 71.3% less medication than the control group. The difference is highly significant (p.<001).

*Stage II pain.* 27 test and 41 control patients have been recruited to Stage II. They are pain free with a maximum of three doses per day of codeine 60 mg., or tramadol 50 mg. The test patients used 59% less analgesic than the controls (p<.05).

*Stage III pain.* Recruitment has been slow and the sample is still too small for statistical significance. There have been only 12 test and 7 control patients. Patients at this level can be free of pain by relying on one medication from the Stage I group and an additional medication from the Stage II group. The test group thus far has used 22% less medication than the controls but the data are not yet significant.

*Stage IV pain.* These patients require continuous application of narcotics like morphine and buprenorphine. The combination of two [coffee enemas](http://www.sawilsons.com/index.html) per day and the modified diet no longer provide additional relief from pain at this level. There have been 39 test patients and 72 controls. At this level, and at level III, there is continuous turnover of patients due to a median survival of only 7.2 months.

**Concluding remarks**

Dr. Green believes that we *“do not use the diagnostic methods that are available,”* but has offered no evidence and cited no literature to bolster his opinion. From time to time, we have demonstrated to colleagues and laymen evidence of remarkable control or regression of disease in exceptional tumor patients. These cases are not held out by us as evidence that here is a “cure” for cancer, but rather that some patients can get well. We present such cases because we believe that Gerson’s integrated set of medical treatments may have contributed to their unusually positive outcomes. Contrary to Dr. Green’s claim, in order to convincingly present cases to medical professionals, we are obliged to rely on the usual types of objective evidence of tumor regression, i.e.: biopsy, CT, MRI, ultrasound, radionuclide scan, etc.

This response would not be complete if we did not point out that modern science does not support Dr. Green’s speculation that enzymes from vegetable juices, taken as nutrition, entering *“the circulation of the patient might evoke a potentially dangerous immune response.”*

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