AL-Amyloidosis and EpiGalloCatechin-3-Gallate: 4 Years and 5 Months Later

Werner Hunstein, February 2011

In a letter to the editor-in-chief of Blood in May, 2007, I asked "EGCG in amyloidosis: a new therapeutic option?" (1). This question can now be answered with a clear "Yes!" EGCG is also recognized by Prof. Giampaolo Merlini, Pavia, as a therapeutic option. He is an outstanding expert on this rare disease and recently bestowed upon me the honorary title of "Father of the Use of EGCG for AL-Amyloidosis." He noted, "His clinical observations opened the way for translational research" (personal communication).

Because of the expected side effects of a planned, second chemotherapy (subsequent to the Palladini scheme) in September, 2006, I followed the advice of my acting physician and previous co-worker, Prof. Antonio Pezzutto, now of the Charité, Berlin, and risked trying a treatment scheme with green tea due to its EGCG content.

He had heard about the in vitro effects of EGCG on amyloid in course of a lecture by Prof. Erich Eberhard Wanker, Max-Delbrück-Zentrum, Berlin, and the fact that green tea is rich in EGCG, which is the main phenol. So, I immediately started drinking 1.5-2.0 l/day green tea. With some effort we were able to measure an EGCG content of 400-600 mg. We found that this amount led to a blood plasma level of 117-236 µg/l EGCG.

The results were already apparent after a short time - an unbelievable, almost miraculous, subjective and objective improvement of my symptoms, as described in Blood (1): my thickened tongue returned to normal as well as my clumsy speech; the thickened cardiac intraventricular septum (IVS) returned towards normal month-by-month; the cardiac pumping strength increased, as described by my excellent cardiologist in Heidelberg, Derliz Mereles (2). I was able to take long walks again and enjoy swimming.

As a reliable characteristic of the disease, I had experienced gingival bleeding and bleeding of my skin four weeks after the end of the Palladini cycle. These symptoms also disappeared. The problems with my sense of taste caused by the therapy, my heavy depression, and my sleeplessness despite exhaustion vanished as well.

Unfortunately, my kidney function deteriorated very rapidly in December, 2008, after the two-year EGCG treatment. The speed of this change is to be expected as a result of a continuing protein excretion of over 1.0 g/24 h (in my case 5.0-6.0 g/24 h). This occurres independent of the prior kidney disease (3).

Prof. Vedat Schwenger of the Heidelberg University Kidney Center has been in charge of my care since January, 2009, and is highly competent in monitoring my ambulatory home peritoneal dialysis.

In order to compensate for the lowering of my EGCG blood levels by a documented washing-out effect of the dialysis, I raised my EGCG dose to 3x 450 mg green tea extract (GTE) capsules with the addition of piperine extract from black pepper to increase the absorption as well as vitamin C to stabilize the volatile EGCG, according to Altland et al. (4). Drinking green tea was no longer feasible due to the limits imposed by the renal insufficiency.

In the meantime, the investigations that stemmed from my self-experimentation have been published: amyloid fibrils of denatured proteins like β-amyloid and α-synuclein are no longer formed (5). Bieschke et al. (Ref. 7; see his contribution on this website) reported the remodeling of β-amyloid fibrils and thus an accompanying reduction of the toxicity in cell cultures.

I have the hope that these scientifically based findings will become common knowledge and also that EGCG will develop from being a dietary supplement to a therapeutic drug.

References

1. Hunstein W. Epigallocatechin-3-gallate in AL amyloidosis: a new therapeutic option? Blood. 2007;110(6): 2216.

2. Mereles D, Wanker EE, Katus HA. Therapy effects of green tea in a patient with systemic light-chain amyloidosis. Clin Res Cardiol. 2008(5);97:341-344.

3. Burton C, Harris KP. The role of proteinuria in the progression of chronic renal failure. Am J Kidney Dis. 1996;27(6):765-775.

4. Altland K, Schreiner R, Hunstein W. Of green tea, black pepper and amyloidoses. Online publication, 2009. www.ukgm.de/ugm_2/deu/ugi_hum/EGCG_Piperin.pdf

5. Ehrnhoefer DE, Bieschke J, Boeddrich A et al. EGCG redirects amyloidogenic polypeptides into unstructured, off-pathway oligomers. Nat Struct Mol Biol. 2008;15(6):558-566.

6. Hauber I, Hohenberg H, Holstermann B et al. The main green tea polyphenol epigallocatechin-3-gallate counteracts semen-mediated enhancement of HIV infection. Proc Natl Acad Sci U S A. 2009;106(22): 9033-9038.

7. Bieschke J, Russ J, Friedrich RP et al. EGCG remodels mature alpha-synuclein and amyloid-beta fibrils and reduces cellular toxicity. Proc Natl Acad Sci USA. 2010;107(17):7710-7715.