

# A CAMEO MENTION OF GAMMA-GLUTAMYLTRANSFERASE (GGT)

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## A MAGICAL GARMENT GIRL USING ALCOHOL TO BREAK A SPELL

### MANGA & LIGHT NOVEL

**Title:** Kore wa Zombie Desu ka? of the Dead  
**Author:** Shinichi Kimura (light novel & manga)  
**Illustrations Light Novel:** Kobiuchi & Muririn  
**Illustrations Manga:** Sacchi  
**Publisher:** Fujimi Shobo

### ANIME TV SERIES

**Director:** Takaomi Kanasaki  
**Writer:** Makoto Uezu  
**Run:** 2011-2012



In a conjectural universe where a boy is resurrected as a zombie by a necromancer, and a young girl is cursed to assume the semblance of a middle-aged man, being able to revert to her original self when drunk, it is interesting, somewhat unexpected and refreshing to hear the said character specifically, very briefly, voice concern that her gamma-glutamyltransferase (GGT) levels were abnormally high.

In this hypothetical universe, the most absurd things can happen... including a boy transforming into a magical zombie girl, with two other protagonists being a necromancer and a vampire ninja... In such a show where comedy reigns supreme, one remains amusingly surprised when a young girl, who temporarily takes the semblance of an older man, complains specifically that in that form her GGT and cholesterol levels were elevated. In "Kore wa Zombie Desu ka?" (written by Shinichi Kimura and adapted to anime by Studio Deen), the girl in question was constantly seen to be drinking alcoholic beverages, which were somehow related to breaking the spell that made her assume the body of a middle-aged man. GGT is mentioned briefly, in a somewhat 'cameo appearance' style in episode 7 of the second series, "Kore wa Zombie Desu ka? Of the dead". It is worthy of note that this line was modified in the English adaptation to reflect terminology more well known to the general public, namely making reference to enlargement of the prostate with advancing age.



GGT is indeed one of the traditional and well known biochemical indicators of alcohol abuse, however lacks high specificity for this purpose. Some other biochemical markers of alcohol consumption include carbohydrate-deficient transferrin (CDT), phosphatidylethanol (PEth), and urine ethyl glucuronide (EtG) and ethysulfate (EtS).<sup>1-8</sup> The ratio of serum aspartate aminotransferase to alanine aminotransferase (AST/ALT ratio) is also used as a potential indicator of alcoholic liver disease.<sup>9,10</sup>

### REFERENCES

- Geppert B, Tezyk A, Zaba C. [Biochemical markers for acute and chronic alcohol consumption]. *Przegl Lek.* 2012;69(10):1163-7.
- Das SK, Nayak P, Vasudevan DM. Biochemical markers for alcohol consumption. *Indian J Clin Biochem.* 2003;18(2):111-8.
- Sharpe PC, McBride R, Archbold GP. Biochemical markers of alcohol abuse. *QJM.* 1996;89(2):137-44.
- Rosman AS. Utility and evaluation of biochemical markers of alcohol consumption. *J Subst Abuse.* 1992;4(3):277-97.
- McDonnell MG, Skalisky J, Leickly E, McPherson S, Battalio S, Nepom JR, et al. Using ethyl glucuronide in urine to detect light and heavy drinking in alcohol dependent outpatients. *Drug Alcohol Depend.* 2015;157:184-7.
- Anton RF. Commentary on: ethyl glucuronide and ethyl sulfate assays in clinical trials, interpretation, and limitations: results of a dose ranging alcohol challenge study and 2 clinical trials. *Alcohol Clin Exp Res.* 2014;38(7):1826-8.
- Schrock A, Hernandez Redondo A, Martin Fabritius M, Konig S, Weinmann W. Phosphatidylethanol (PEth) in blood samples from "driving under the influence" cases as indicator for prolonged excessive alcohol consumption. *Int J Legal Med.* 2015.
- Walther L, de Bejczy A, Lof E, Hansson T, Andersson A, Guterstam J, et al. Phosphatidylethanol is Superior to Carbohydrate-Deficient Transferrin and gamma-Glutamyltransferase as an Alcohol Marker and is a Reliable Estimate of Alcohol Consumption Level. *Alcohol Clin Exp Res.* 2015;39(11):2200-8.
- Gurung RB, Purbe B, Gyawali P, Risal P. The ratio of aspartate aminotransferase to alanine aminotransferase (AST/ALT): the correlation of value with underlying severity of alcoholic liver disease. *Kathmandu Univ Med J (KUMJ).* 2013;11(43):233-6.
- Nyblom H, Berggren U, Ballidin J, Olsson R. High AST/ALT ratio may indicate advanced alcoholic liver disease rather than heavy drinking. *Alcohol Alcohol.* 2004;39(4):336-9.