



## Analysis and processing of electrogastroenteric signal

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Author contributions: All authors contributed equally to the work.

Original title: *China National Journal of New Gastroenterology* (1995-1997) renamed *World Journal of Gastroenterology* (1998-).

Received: December 11, 1995

Revised: February 14, 1996

Accepted: June 1, 1996

Published online: September 15, 1996

### Abstract

**AIM:** Electrogastroenteric signal is very weak and is always buried in strong noises. It suffers from interference originating from the patient's body and various environmental factors; In addition, the signal itself has random characteristics. Obviously, by means of simple waveform analysis, it is difficult, even impossible, to show the physiological information expressed by this special bioelectrical signal.

**METHODS:** This paper will introduce an electrogastroenteric analyzer (Model WCDF) which has carried out extracting the signal steadily with weak signal detection technique. At the same time, the analyzer makes use of the software developed by ourselves to analyze the waveforms recorded. First, the signal of time domain is divided into time segment and processed with Fourier spectrum analysis method; Then the signal is transferred from time domain to frequency domain. The analyzer simultaneously monitors several points on the abdominal surface and uses the running spectrum

method to expand the power spectrum into a function of time. The running is expressed by a pseudo three dimensional expansion to study the dynamic regularity of the signal. Meanwhile, the disorder index of electrogastroic rhythm is shown in histograms. The 3 D diagram and histogram give us a straight forward criteria. Second, we used the experiences from gastroenterologists at home and abroad for reference and progressively summed up several parameters that could reflect the variation regularity of waveforms. We strived for providing identification criteria in a quantitative basis for clinical analysis, and achieved a good effect.

**RESULTS:** The paper will also describe the general health investigation for several thousand people and their clinical analysis by WCDF-4B electrogastro-enteric analyzer. Some heavy symptomatic patients with upper digestive tract illness underwent the test with gastroscopy, or GI and did not find abnormality; However they were found to be function obstacle of gastric motion by means of the electrogastroenteric analyzer.

**CONCLUSION:** We believe that the electrogastroenteric analyzer will be a non-invasive and effective method for clinical diagnosis along with the advance of the technology and spreading clinical application of the analyzer to achieve more mature experiences.

**Key words:** Analysis and processing; Electrogastroenteric signal

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Xu WJ, Yang WB. Analysis and processing of electrogastroenteric signal. *World J Gastroenterol* 1996; 2(Suppl1): 65 Available from: URL: <http://www.wjgnet.com/1007-9327/full/v2/iSuppl1/65.htm> DOI: <http://dx.doi.org/10.3748/wjg.v2.iSuppl1.65>

E- Editor: Liu WX



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