

K207

Efficacy evaluation of natural medicine based on the state analysis of iron

KAWASE Masaya^{*1,*2}, SAITO Tadashi^{*2}, IKEDA Yasuhiro^{*3},
Tatsuya Takagi^{*4}, MORIMOTO Shotaro^{*2,*5}, TAKAHASHI
Kyoko^{*6,*7}, SHIBAHARA Naotoshi^{*6}, KOMATSU Katsuko^{*6}

- 1) Nagahama Institute of Bio-science and Technology, 1266 Tamura-cho, Nagahama, Shiga 526-0829, Japan
- 2) Radioisotope Research Center, Osaka University, 1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan
- 3) Graduate School of Science, Osaka University, 1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan
- 4) Graduate school of Pharmaceutical Sciences, Osaka University, 1-6 Yamadaoka, Suita 565-0871 JAPAN
- 5) Faculty of Pharmacy, Osaka Ohtani University, 3-11-1 Nishiki-ori-kita, Tondabayashi, Osaka 584-8540, Japan
- 6) Museum of Osaka University, 1-1 Machikaneyama-cho, Toyonaka, Osaka 560-0043, Japan
- 7) Institute of Natural Medicine, Toyama University, 2630 Sugitani, Toyama 930-0194, Japan

m_kawase@nagahama-i-bio.ac.jp

1. Introduction

Kanpo medicines were combined with some natural medicines in a constant ratio, and the effect is affected by the quality (basis source plant / ingredient composition) of the individual natural medicine. *Tokishakuyakusan* combining a peony (*Shakuyaku*) is used for improvement of the blood emptiness. In other words anemia becomes the object. Therefore a state of the iron of medicines becomes the one of the interest. Including a peony ("*BONTEN*" (*wa-shaku*) of a medical use kind developed in Japan or foreign type peony (*yo-shaku*) of the gardening kind), a combination crude drug except it used two kinds of common *Tokishakuyakusan* in this study. *Tokishakuyakusan* including *wa-shaku* tends to have good clinical result, and this result is confirmed by statistical analysis in this study. In this study, we also were aimed at examining the difference of this effect and relations with the state of the iron of medicines by the Moessbauer effect measurement.

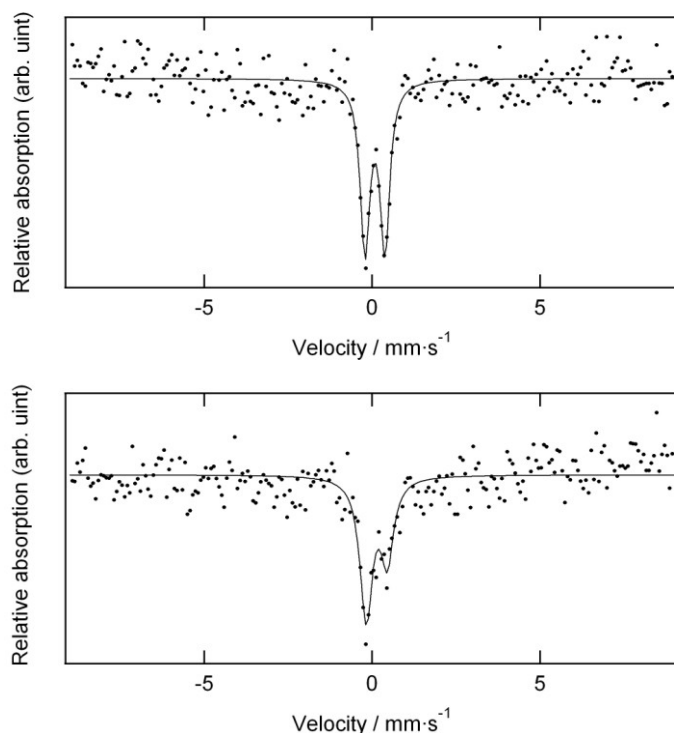
2. Method

In this study, *Tokishakuyakusan* used as clinical care in Toyama University Hospital. The iron content in a sample measured it by ICP-MS, and the state analysis of the iron went by the Moessbauer effect measurement. The Moessbauer effect measured ⁵⁷Co (925 MBq) which assumed Rh a matrix as source.

3. Results and Discussion

In *wa-shaku* and *yo-shaku*, it was confirmed that a main drug ingredient made a little difference by ingredient analysis. The content of the iron concerned with a metal ingredient, anemia in particular understood that neither had a difference as a result of analysis by ICP-MS.

The result of the Moessbauer effect measurement to analyze a state of the iron became just what to show it in Fig.1. The spectrum of top (a) was that used *wa-shaku* for, bottom (b) was that used *yo-shaku*.



Tokishakuyakusan containing *yo-shaku* shows the spectrum shape that is an asymmetry, and a state of the iron is understood to be at least two kinds.

As for *Tokishakuyakusan* containing *wa-shaku*, the state of the iron is one kind for this. The difference that is in this state is regarded as the cause of the one of the differences of the efficacy.

Fig. 1 Mossbauer spectra of *wa-shaku* (a) and *yo-shaku* (b)

In addition, as a result of having analyzed it about the other trace elements, Se was detected only by *Tokishakuyakusan* containing *wa-shaku*, and connection with the efficacy was suggested.

The statistical analysis of the clinical data was also performed by using partial least square (PLS) etc. About the details of the statistical analysis, we are going to report it.