

Hypersaline hot spring water with similar hydrochemical facies but different origin from Arima-type thermal water - Yokawa Hot Spring, Hyogo Prefecture, Japan

*Shinji Ohsawa¹, Kazuhiro Amita²

1. Institute for Geothermal Sciences, Graduate School of Science, Kyoto University, 2. Research Center for Engineering Science, Graduate School of Engineering and Resource Science, Akita University

Saline hot spring water and its associated gases were sampled from some hot springs in Arima and surrounding areas in southwestern Hyogo Prefecture. Results show the discharge of hypersaline hot spring water with similar hydrochemical facies but different isotopic characteristics from Arima-type thermal water (e.g., δD - $\delta^{18}O$ of water, He isotopic composition) at Yokawa Hot Spring. Deep-seated saline water beneath Yokawa Hot Spring has many similarities to diagenetic fluid under plain areas in the sedimentary basin, but the water has different HCO_3 concentrations and major components of associated gases. Its hydrochemical facies has become Na-Cl- HCO_3 type. Elucidating the origin of carbonate components of the Yokawa Hot Spring water is expected to be important to ascertain why differences exist in hydrochemical facies and gas composition. For the Yokawa Hot Spring water, estimates of the origin of CO_2 and He in associated gases using isotope data suggest that the source of these gas components is not deeper than the crust.

Keywords: Yokawa Hot Spring, Arima-type thermal water, Hydrochemical facies, Isotopic nature