The impairment of vasodilatory function is common symptom in elderly especially among those who have arteriosclerosis and diabetic merits. In the 19th-century Europe, CO$_2$-enriched water had been used as naturopathy for hypertensions, exclusively. In 1997 Japan, the CO$_2$-enriched water could be adopted as a clinical application, since the device was developed to produce artificial CO$_2$-water easier. Thereafter, artificial CO$_2$-water had been comparable effect of natural CO$_2$-hot spring water in experimental animal models (Hashimoto, 1999), and the efficacy has been studied in various disease states of human. In the therapy of peripheral arterial disease (PAD), several reports demonstrated the effects for intermittent claudication including the improved hemodynamic status of immersion part (Hartmann et al, 1997).

Based on these findings, we focused on microcirculatory effects of topical application of artificial CO$_2$-enriched water, and studied clinical efficacy in patients with PAD especially critical limb ischemia (CLI). Initially, we showed that immersion of feet in artificial CO$_2$-water (CO$_2$ immersion) increased the blood flow of feet much higher than the plain water even in the patients with CLI, and it improved the limb preservation rate in patients without indication of revascularization (Toriyama et al, 2002). Furthermore, we clarified that CO$_2$ immersion accelerated wound healing after lower extremities bypass surgery in CLI patients with ulcer/gangrene as an adjuvant therapy (Hayashi et al, 2008).

We summarize the clinical studies for artificial CO$_2$-water foot bathing in PAD, and clarify the therapeutic usefulness of CO$_2$ immersion in CLI patients.

**Keywords:** Foot bath, CO$_2$ hot spring, Clinical efficacy