CHARACTERIZATION OF HUMAN MONOCARBOXYLATE TRANSPORTER 6
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The monocarboxylate transporter (MCT) family (SLC16 gene family) comprises 14 members. While MCT1, 2, 3 and 4 have been demonstrated to transport monocarboxylates such as lactate, pyruvate and ketone bodies, MCT8 transports thyroxin. T-type amino acid transporter 1 (TAT1) transports aromatic amino acid such as tryptophan. However, the transport properties of other isoforms, such as MCT6, remain to be characterized. In this study, we aimed to investigate the transport properties of human MCT6.

Human MCT6 cDNA was obtained from NEDO human cDNA project and transcribed into cRNA in vitro. Xenopus laevis oocytes were injected with MCT6 cRNA and then incubated for 3 days at 18°C.
The uptake of [3H]bumetanide by oocyte expressing MCT6 linearly increased with an elapse of time up to 60 minutes and the uptake rate was about 6-fold higher than that by non-injected oocytes. On the other hand, lactate, thyroxin and tryptophan were not transported by MCT6.

In conclusion, it was first demonstrated that MCT6 transports bumetanide and its selectivity for substrate is distinct from other MCT isoforms.