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Descending thin limb of the intermediate loop expresses both aquaporin 1 and urea transporter A2 in the mouse kidney

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A new intermediate type of Henle's loop has been reported that it extends into the inner medulla and
turns within the first millimeter beyond the outer medulla. This study aimed to identify the descending thin limb (DTL) of the intermediate loop in the adult C57Bl/6 mouse kidney using aquaporin 1 (AQP1) and urea transporter A2 (UT-A2) antibodies. In the upper part of the inner stripe of the outer medulla (ISOM), AQP1 was expressed strongly in the DTL with type II epithelium of the long loop, but not in type I epithelium of the short loop. The DTL of the intermediate loop exhibited weak AQP1 immunoreactivity.
UT-A2 immunoreactivity was not observed in the upper part of any DTL type. AQP1 expression was similar in the upper and middle parts of the ISOM. UT-A2 expression was variable, being expressed strongly in the DTL with type I epithelium of the short loop, but not in type II epithelium of the long loop. In the innermost part of the ISOM, AQP1 was expressed only in type III epithelium of the long loop. UT-A2-positive and UT-A2-negative cells were intermingled in type I epithelium of the intermediate loop, but
were not observed in type III epithelium of the long loop. UT-A2-positive DTLs of the intermediate loop extended into the UT-A2/AQP1-negative type I epithelium in the initial part of the inner medulla. These results demonstrate that the DTL of the intermediate loop is composed of type I epithelium and expresses both AQP1 and UT-A2. The functional role of the DTL of the intermediate loop may be distinct
from the short or long loops.