Reabsorption of glucose in the proximal tubule occurs predominantly via the sodium glucose cotransporter

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Reabsorption of glucose in the proximal tubule occurs predominantly via the sodium glucose cotransporter 2 (SGLT2). There has been substantial interest in blocking this transporter, thereby promoting glycosuria, as a novel strategy in the treatment of diabetes. Over the last 10 years a number of SGLT2 inhibitors have entered clinical development and several are now in clinical practice. The available clinical evidence shows consistent reduction in glycaemic parameters and some evidence suggests additional effects including weight loss and mild blood pressure reduction. Interest in these findings places particular emphasis on the effects of these compounds on diabetic nephropathy: the transcriptional control of SGLT2 expression in human proximal tubular cells implicates a number of cytokines in the alteration of SGLT2 expression and some experimental data suggests that SGLT2 inhibition may correct early detrimental effects of diabetes by reducing proximal tubular sodium and glucose transport. To date, a possible renoprotective effect independent of the glucose lowering effects of these agents, has been suggested but not proven.