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LETTER

Variable effects of statins on glucose homeostasis parameters and their diabetogenic role

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Abbreviation
HOMA-B HOMA of beta cell function

To the Editor: In a recent issue of *Diabetologia*, Cederberg et al report a dose-dependent increased risk of type 2 diabetes with long-term simvastatin or atorvastatin treatment [1]. Impaired insulin sensitivity and reduced pancreatic insulin secretion may mediate this diabetogenic effect [1]. Some comments may be of interest.

1. **Dose-response and 3-hydroxy-3-methylglutaryl-CoA reductase inhibition** We previously showed that rosuvastatin increased insulin resistance in patients with impaired fasting glucose in a dose-dependent manner [2]. It was suggested that statins reduce insulin sensitivity in parallel with their 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) reductase inhibitory capacity [3]. This effect might be most prominent for the potent statin rosuvastatin.

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2. **Lipophilic vs hydrophilic statins** Impaired insulin secretion induced by the lipophilic simvastatin and atorvastatin may not be relevant for the hydrophilic rosuvastatin [3, 4]. Post-treatment changes in HOMA of beta cell function (HOMA-B) [5] as a surrogate of pancreatic beta cell function were calculated using insulin and glucose values from a previous dataset of rosuvastatin-treated patients [2]. Rosuvastatin at daily doses of 10, 20 and 40 mg dose-dependently increased HOMA-B by 14.2% (p=not significant vs baseline), 25.4% ($p<0.05$ vs baseline; $p<0.05$ vs 10 mg) and 46.1% ($p<0.05$ vs baseline; $p<0.05$ vs 10 and 20 mg), respectively. The resultant compensatory hyperinsulinaemia may prevent hyperglycaemia in the short-term [2]. In this context, it is relevant to prospectively compare the time-dependent diabetogenic effects of lipophilic and hydrophilic statins.

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