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COMMENT ON GIACCO ET AL.

GLP-1 Cleavage Product Reverses Persistent ROS Generation After Transient Hyperglycemia by Disrupting an ROS-Generating Feedback Loop.

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Giacco et al. (1) recently reported that 1 h of high-glucose exposure induces an overgeneration of superoxide in endothelial cells and in mice, which lasts for almost 2 days after glucose normalization.

Years ago, the impairment of endothelial vasodilation of rat arterioles after 1 h of high glucose due to superoxide overgeneration was published (2), consistent with our report that a 2-h perfusion of hearts with high glucose causes an increase of coronary pressure due to superoxide (3). In contrast to the study by Giacco et al. (1), which is just descriptive, these studies linked the effect of short-term hyperglycemia not only to superoxide overgeneration but also to a functional outcome on the endothelium. Moreover, a huge amount of literature exists on acute hyperglycemia and free radical generation, not only in experimental in vivo and in vitro models but also in real life (reviewed in ref. 4).

It also has been reported that the effect of high glucose persists for at least 2 days (1). However, it has already been reported that in human umbilical vein endothelial cells, in adult retinal pigment epithelial-19 cells, and in rats 3 weeks of high-glucose exposure induce an overgeneration of free radicals, which persists for 1 week after glucose normalization (5).

Finally, Giacco et al. (1) reported that the effect of acute hyperglycemia on superoxide generation can be disrupted by glucagon-like peptide 1 (GLP-1) cleavage product, confirming our previous evidence that GLP-1 decreases free radical generation during acute hyperglycemia (6).

The study is certainly of interest, explaining in more detail the mechanism behind superoxide production during acute hyperglycemia. However, a more accurate selection of references would have placed this finding in a more correct scenario: just another piece of an already long story.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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