Lemma. Given $\mathbf{d}, \mathbf{e} \in \mathrm{Hom}_{\mathbf{DP}}(\mathbf{P}; \mathbf{Q})$ and $\mathbf{g}, \mathbf{h} \in \mathrm{Hom}_{\mathbf{DP}}(\mathbf{R}; \mathbf{S})$, one has:

$$\frac{\mathbf{d} \preceq_{\mathbf{DP}} \mathbf{e} \quad \mathbf{g} \preceq_{\mathbf{DP}} \mathbf{h}}{\mathbf{d} \otimes \mathbf{g} \preceq_{\mathbf{DP}} \mathbf{e} \otimes \mathbf{h}}.$$

In other words, the monoidal product preserves order on **DP**.