Let $X = X_1 \times X_2$ a topological vector spaces and $f : X_1 \times X_2 \to \mathbb{R}$ a function.

For each $x = (x_1, x_2) \in X$ and $y_1 \in X_1$, let us consider the following function defined as follows:

$$F(x, y_1) = \sup_{\mathcal{V} \in \Omega(x)} \inf_{z \in \mathcal{V}} \left[f(y_1, z_2) - \inf_{z' \in \mathcal{V}} f(z_1, z_2^{'}) \right]$$

where $\Omega(x)$ is the set of all open neighborhoods $\mathcal{V}$ of x.

Problem:

If the function $y_1 \mapsto f(y_1, x_2)$ is quasiconcave ($\forall x_2 \in X_2$) then $y_1 \mapsto F(x, y_1)$ is quasiquancave ($\forall x \in X$)**?????**