Michelyne Haroun et al., J Dev Drugs 2014, 3:3
http://dx.doi.org/10.4172/2329-6631.S1.009

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September 25-26, 2014 Valencia Convention Centre, Spain

Molecular modeling design, synthesis and antihyperglycemic evaluation of certain 5-(arylalkoxy-benzylidine)-imidazolidine-2,4-dione derivatives as potential PPARγ agonists

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A new series of substituted 5-(aryl-alkoxy-benzylidine)-Imidazolidine-2,4-dione derivatives (IVa-f, Va), were designed as selective PPARγ agonists analogous to the reference drug; rosiglitazone(1). The comparative Fit/Dock scores of IVa-f molecules with the PPARγ agonists' hypothesis and the 3D structure of PPARγ receptor were nearly similar to the reference drug (1); while the designed molecule (Va) have higher scores than 1. The designed molecules were synthesized and evaluated for their anti-hyperglycemic activity on hyperglycemic animal model, where compounds IVa-IVe showed similar or slightly higher anti-hyperglycemic activity in comparison to 1, whereas compounds IVf and Va gave the highest activity among the designed molecules by 1.2 and 1.3 higher anti-hyperglycemic activity than rosiglitazone.

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