

Target Name	$\beta$ -ketoacyl-acyl carrier protein synthase III
Target TTD ID	TTDR00361

Target Species	Human
Chemical Type	Benzoylaminobenzoic acid derivatives
Mode of Action	Inhibitor
Activity Type	FabH inhibitory activity
QSAR Model 1	$-\log IC_{50} = 5.679(\pm 0.307) - 1.326(\pm 0.633)I_{N_4} + 0.988(\pm 0.709)I_{arom}$ $n=20, r=0.822, r^2=0.676, s=0.522, F=17.76, q^2=0.508, S_{press}=0.644,$ $S_{DEP}=0.593, ICAP=0.210, \text{Chance} \leq 0.001$
QSAR Model 2	$-\log IC_{50} = 5.492(\pm 0.463) - 1.217(\pm 0.662)I_{N_4} + 0.956(\pm 0.709)I_{arom}$ $+ 0.164(\pm 0.305)\pi$ $n=20, r=0.837, r^2=0.701, s=0.518, F=12.50, q^2=0.437, S_{press}=0.710,$ $S_{DEP}=0.635, ICAP=0.328, \text{Chance} \leq 0.001$
QSAR Model 3	$-\log IC_{50} = 5.924(\pm 0.175) - 1.571(\pm 0.291)I_{N_4} + 0.707(\pm 0.213)I_{arom}$ $n=26, r=0.878, r^2=0.771, s=0.464, F=38.636, q^2=0.707, S_{press}=0.524,$ $S_{DEP}=0.493, ICAP=0.497, \text{Chance} \leq 0.001$
QSAR Model 4	$-\log IC_{50} = 5.725(\pm 0.264) - 1.687(\pm 0.312)I_{N_4} + 0.011(\pm 0.011)MR$ $+ 0.560(\pm 0.56)I_{arom}$ $n=26, r=0.884, r^2=0.781, s=0.475, F=26.129, q^2=0.698, S_{press}=0.544,$ $S_{DEP}=0.500, ICAP=0.497, \text{Chance} \leq 0.001$

<p>QSAR Model 5</p>	$-\log \text{IC}_{50} = 5.848(\pm 0.869) - 2.110(\pm 0.674)I_{N_4} + 0.020(\pm 0.029)MR$ $+ 0.290(\pm 0.496)I_{\text{arom}}$ <p><math>n = 21, r = 0.867, r^2 = 0.752, s = 0.505, F = 17.163, q^2 = 0.576, S_{\text{press}} = 0.660,</math>  <math>S_{\text{DEP}} = 0.594, \text{ICAP} = 0.493, \text{Chance} \leq 0.001, r^2_{\text{pred}} = 0.505</math></p>
<p>QSAR Model 6</p>	$-\log \text{IC}_{50} = 5.158(\pm 0.309) + 1.478(\pm 0.456)I_{\text{arom}} + 1.679(\pm 0.827)I_{x\text{-OH}}$ <p><math>n = 37, r = 0.792, r^2 = 0.628, s = 0.674, F = 26.769, q^2 = 0.575, S_{\text{press}} = 0.721,</math>  <math>S_{\text{DEP}} = 0.691, \text{ICAP} = 0.059, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 7</p>	$-\log \text{IC}_{50} = 5.364(\pm 0.313) - 1.011(\pm 0.693)I_{N_4} + 1.281(\pm 0.433)I_{\text{arom}}$ $+ 1.539(\pm 0.753)I_{x\text{-OH}}$ <p><math>n = 37, r = 0.840, r^2 = 0.706, s = 0.607, F = 26.536, q^2 = 0.645, S_{\text{press}} = 0.668,</math>  <math>S_{\text{DEP}} = 0.631, \text{ICAP} = 0.303, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 8</p>	$-\log \text{IC}_{50} = 4.9.9(\pm 0.375) + 1.694(\pm 0.460)I_{\text{arom}} + 1.856(\pm 0.693)I_{x\text{-OH}}$ <p><math>n = 25, r = 0.880, r^2 = 0.774, s = 0.530, F = 37.771, q^2 = 0.711, S_{\text{press}} = 0.600,</math>  <math>S_{\text{DEP}} = 0.563, \text{ICAP} = 0.201, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 9</p>	$-\log \text{IC}_{50} = 5.218(\pm 0.370) + 1.404(\pm 0.426)I_{\text{arom}} - 1.368(\pm 0.620)I_y$ $+ 1.576(\pm 0.516)I_{x\text{-R}}$ <p><math>n = 25, r = 0.926, r^2 = 0.858, s = 0.430, F = 42.380, q^2 = 0.799, S_{\text{press}} = 0.512,</math>  <math>S_{\text{DEP}} = 0.469, \text{ICAP} = 0.452, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 10</p>	$-\log \text{IC}_{50} = 5.275(\pm 0.606447) + 2.05517(\pm 1.0504)I_x - 0.900167(\pm 1.0504)I_{x\text{-OH}}$ <p><math>n = 12, r = 0.889, r^2 = 0.790, s = 0.644, F = 16.99, q^2 = 0.541, S_{\text{press}} = 0.953,</math>  <math>S_{\text{DEP}} = 0.825, \text{ICAP} = 0.333, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 11</p>	$-\log \text{IC}_{50} = 5.212(\pm 0.127) + 1.376(\pm 0.200)I_{\text{arom}} + 1.660(\pm 0.386)I_{x\text{-OH}}$ <p><math>n = 44, r = 0.782, r^2 = 0.611, s = 0.644, F = 32.191, q^2 = 0.563, S_{\text{press}} = 0.682,</math>  <math>S_{\text{DEP}} = 0.658, \text{ICAP} = 0.029, \text{Chance} \leq 0.001</math></p>

<p>QSAR Model 12</p>	$-\log \text{IC}_{50} = 5.371(\pm 0.125) - 1.018(\pm 0.316)I_{N_4} + 1.224(\pm 0.186)I_{\text{arom}}$ $+ 1.552(\pm 0.350)I_{x\text{-OH}}$ <p><math>n=44, r=0.831, r^2=0.691, s=0.581, F=29.811, q^2=0.636, S_{\text{press}}=0.630,</math>  <math>S_{\text{DEP}}=0.601, \text{ICAP}=0.250, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 13</p>	$-\log \text{IC}_{50} = 5.532(\pm 0.118) - 1.018(\pm 0.316)I_{N_4} + 1.070(\pm 0.168)I_{\text{arom}}$ $+ 1.443(\pm 0.307)I_{x\text{-OH}} - 1.156(\pm 0.316)I_y$ <p><math>n=44, r=0.877, r^2=0.770, s=0.508, F=32.618, q^2=0.681, S_{\text{press}}=0.597,</math>  <math>S_{\text{DEP}}=0.562, \text{ICAP}=0.250, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 14</p>	$-\log \text{IC}_{50} = 5.577(\pm 0.114) - 1.224(\pm 0.267)I_{N_4} + 1.026(\pm 0.161)I_{\text{arom}}$ $+ 1.412(\pm 0.293)I_{x\text{-OH}} - 0.851(\pm 0.381)I_x - 0.918(\pm 0.319)I_y$ <p><math>n=44, r=0.893, r^2=0.797, s=0.484, F=29.764, q^2=0.713, S_{\text{press}}=0.574,</math>  <math>S_{\text{DEP}}=0.534, \text{ICAP}=0.373, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 15</p>	$-\log \text{IC}_{50} = 1.248(\pm 0.924) + 0.383(\pm 0.065)X1_{\text{sol}} - 0.029(\pm 0.004)T(\text{N}\cdots\text{O})$ <p><math>n=44, r=0.769, r^2=0.592, s=0.660, F=29.752, q^2=0.530, S_{\text{press}}=0.707,</math>  <math>S_{\text{DEP}}=0.683, \text{ICAP}=0.286, \text{Chance} \leq 0.001</math></p>
<p>QSAR Model 16</p>	$-\log \text{IC}_{50} = 3.987(\pm 0.254) + 0.013(\pm 0.002)\text{MPC}_{10} - 1.896(\pm 0.277)I_{N_4}$ $+ 1.786(\pm 0.315)I_{x\text{-OH}}$ <p><math>n=44, r=0.868, r^2=0.753, s=0.520, F=40.570, q^2=0.701, S_{\text{press}}=0.571,</math>  <math>S_{\text{DEP}}=0.545, \text{ICAP}=0.168, \text{Chance} \leq 0.001</math></p>
<p>Molecular Descriptor</p>	<p>Access the following web-servers to compute molecular descriptors: <a href="#">MoDel</a> and <a href="#">e-dragon</a></p> <p><math>I_n</math>: Indicator variable having value 1 if <math>n = 2</math> of the aryl nucleus, value 0 if <math>n = 1</math>, present at the same position which means A ring is either pentacyclic aromatic carboxylic acid or hexa cyclic aromatic carboxylic acid;</p> <p><math>I_x</math>: Indicator variable having value 1 if heteroatom is present at x position of the aryl nucleus, value 0 if carbon is attached at the same position in A ring;</p>

	<p><math>I_{x-R}</math>: Indicator variable having value 1 if electronegative atom is present at R on substitution position (x) of the aryl nucleus A, value 0 if R is absent at the same position in A ring;</p> <p><math>I_{x-OH}</math>: Indicator variable having value 1 if electronegative atom at R is specially the OH group at substitution position (x) of the aryl nucleus, value 0 if OH is absent at the same position in A ring;</p> <p><math>I_y</math>: Indicator variable having value 1 if heteroatom is present at y position of the aryl nucleus, value 0 if carbon is attached at the same position in A ring;</p> <p><math>I_{arom}</math>: Indicator variable having value 1 if phenyl is present at R1 position of the benzene (B) nucleus, value 0 if hydrogen is attached at the same position;</p> <p><math>I_{HETERO}</math>: Indicator variable having value 1 if any electronegative group is present at 4th position in phenyl ring of R<sub>1</sub> substitution present at the benzene B nucleus, value 0 if carbon is attached at the same position;</p> <p><math>I_{N4}</math>: Indicator variable having value 1 if nitrogen is present at 4<sup>th</sup> position in aryl ring of the R<sub>1</sub> substitution of the benzene B nucleus, value 0 if carbon is attached at the same position;</p> <p><math>I_{pC}</math>: Indicator variable having value 1 if the carbon with any substitution is present at 4th position in Ring R1, value 0 if carbon without any substitution is present at the same position.</p>
<b>Reference</b>	<p>QSAR studies on benzoylaminobenzoic acid derivatives as inhibitors of beta-ketoacyl-acyl carrier protein synthase III. <i>European Journal of Medicinal Chemistry</i> 43 (2008) 1071-1080</p>