```mathematica
𝔼[M_ ?MatrixQ] := MatrixExp[M];
Simplify[𝔼[η₁ y].𝔼[α₁ a].𝔼[ξ₁ x].𝔼[η₂ y].𝔼[α₂ a].𝔼[ξ₂ x] == 𝔼[η₀ y].𝔼[α₀ a].𝔼[ξ₀ x] /.
   {η₀ → η₁ + (e^(-2 α₁) η₂)/(1 + η₂ ξ₁),  α₀ → α₁ + α₂ + Log[1 + η₂ ξ₁],  ξ₀ → (ξ₂ + ξ₁ (e^(-2 α₂) + η₂ ξ₂))/(1 + η₂ ξ₁)}]
```