We study the time dependence of the density operator of molecular aggregates in contact with thermal bath, to find a proper approximation for the description of a coherence transfer influence on this evolution. It is based on results of the computer program, written by the author of the work. The program uses three methods of evaluation – the solution of the convolution Quantum Master Equation, and solution of the derived Redfield equations in Markov and subsequent Secular approximations. The temperature dependence and dependence on other parameters of the model are discussed on the basis of the obtained numerical results performed on an example of a trimer. The influence of coherence transfer on time-evolution superoperator of the trimer is discussed as well. The reasons why the Markov approximation fails for a wide spectrum of parameters are given. It is concluded that it is not suitable for the description of coherence transfer effects.