Some Restrictions on the Existence of Second Order Limit Language

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Abstract. The cut and paste phenomenon on DNA molecules with the presence of restriction enzyme and appropriate ligase has led to the formalism of mathematical modelling of splicing system. A type of splicing system named Yusof-Goode splicing system is used to present the transparent behaviour of the DNA splicing process. The limit language that is defined as the leftover molecules after the system reaches its equilibrium point has been extended to a second order limit language. The non-existence of the second order limit language biologically has lead to this study by using mathematical approach. In this paper, the factors that restrict the formation of the second order limit language are discussed and are presented as lemmas and theorem using Y-G approach. In addition, the discussion focuses on Yusof-Goode splicing system with at most two initial strings and two rules with one cutting site and palindromic crossing site and recognition sites.