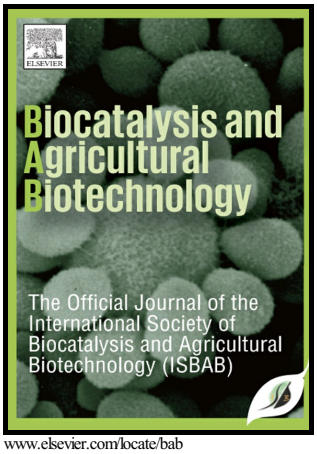

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Computational Analysis of Micro RNAs Compatibility in Pharmacogenomic Based Regulatory Networks of Psoriatic Arthritis: An Initiation towards Identifying a Potential miRNA to Treat Psoriatic Arthritis

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Abstract

In the era of post genomics, performing a computational analysis to understand the pharmacogenomic based regulation in Psoriatic Arthritis with respect to the principles of data mining and constructing a regulatory network with respect to the principles of systems biology and analyzing the network with respect to the principles of test statistic remains a challenging task to execute. The challenge was approached by identifying the associated genes of Psoriatic Arthritis from PharmGKB and it was followed by identifying the associated regulators (MicroRNAs and Transcription Factors) from miRTarBase / RegNetworks. Finally the compatibility of miRNA in Regulatory Networks is analyzed by the statistical measure in miRmap.

Keywords: Computational analysis; Psoriatic Arthritis; PharmGKB; miRTarBase; RegNetworks; miRmap

1. Introduction

Psoriatic arthritis is a severe type of arthritis because it results in the deformities of joint and damages develop in a large number of patients (Gladman et al, 2005; McHugh et al, 2003) and erosions in bone was also observed in 47% of patients within the development of disease in the first 2 years, despite of the usage of medications (Gladman et al, 1995; Gladman et al, 2010; Taylor et al, 2006). The prevalence of psoriatic arthritis in the USA ranges from 6-25cases/ 10,000 people (Ogdie and Weiss, 2015; Villani et al, 2015). It was believed in early days that Psoriatic arthritis was a rare disease but the recent studies on CASPAR indicate the fact that it occurs up to 30% of psoriatic patients (Dominguez-Rosado et al, 2016; Eder et al, 2016). These epidemiological data of USA suggest that the prevalence of psoriatic arthritis is 3% and about 15% of psoriatic patients were not properly diagnosed as psoriatic arthritis (Dominguez-Rosado et al, 2016). The annual prospective of incidences with respect to psoriatic arthritis were reported to be in a range of 2-3% in a study of participants affected with psoriasis (Eder et al, 2016; Lubrano et al, 2016).Psoriatic arthritis is not commonly observed in Blacks and Asians. The ratio of affected male-to-female ratio is 1:1. Psoriatic arthritis can either begin during childhood (early onset) or in the middle of adolescent stage (Late Onset). In case of psoriatic arthritis, there are two clinical subtypes that are not mutually exclusive. In an observational trial, patients were