عنوان مقاله:

Identification of Genetic and Protein Markers in Salmonella enterica serovar Typhimurium by Bioinformatic Analyses for the Purpose of Diagnosis and Treatment

محل انتشار:

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نویسندگان:

Mojdeh Amandadi - *Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran*

Hadi Ravan - *Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran*

Mehdi Hassanshahian - *Department of Biology, Faculty of Science, Shahid Bahonar University of Kerman, Kerman, Iran*

خلاصه مقاله:

Background and Aims: Salmonella enterica serovar Typhimurium is one of the common causes of food poisoning in human. Since the selection of appropriate markers is one of the main challenges for the detection of this pathogen, in the current study, genetic markers of this serovar were screened using bioinformatical tools. In the second phase, structure and function of proteins encoded by these markers, were determined. Materials and Methods: This study was conducted between ۲۰۱۶ and ۲۰۱۷. In order to find the genetic markers of Salmonella enterica serovar Typhimurium, ۴۵ complete genomes belonging to Salmonella enterica serovar Typhimurium and the other genera of Enterobacteriacea family were compared using Mauve software. To determine the structure and function of proteins encoded by these sequences, I-TASSER and Phyre۲ software beside CDD, Inter Pro Scan, DALI, and Pro Func databases were used for structural and functional modeling, respectively. Results: Special regions of STM۴۴۹۱-STM۴۴۹۶ genes were determined as specific markers for Salmonella enterica serovar Typhimurium. The function of proteins encoded by these markers were proposed to be classified in five groups, including Lon protease, nucleotide binding proteins, nucleotide three phosphatases (NTP), proteins involved in the DNA repair , and DNA methylase. Conclusions: Specific regions of STM۴۴۹۱-STM۴۴۹۶ genes can be used as effective diagnostic targets for the detection of pathogenic Salmonella enterica serovar Typhimurium. Moreover, proteins encoded by these genes can be suggested as suitable targets for the design of new therapeutic agents to prevent and treat the infections caused by this pathogen.

کلمات کلیدی:

Salmonella typhimurium, Specific markers, Protein structure modeling,
سالمونلا تیفی موریوم, مارکرهای اختصاصی, مدلسازی ساختار پروتئین