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Structural elucidation and antimicrobial activity of a diketopiperazine isolated from a <i>Bacillus</i> sp. associated with the marine sponge <i>Spongia officinalis</i>	Dhruba Bhattacharya, Tapan Kumar Lai, Amit Saha, Joseph Selvin & Joydeep Mukherjee (School of ENVS, JU)	Natural Product Research, 35:14, 2315-2323	2019	1478-6419



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Structural elucidation and antimicrobial activity of a diketopiperazine isolated from a *Bacillus* sp. associated with the marine sponge *Spongia officinalis*

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ABSTRACT

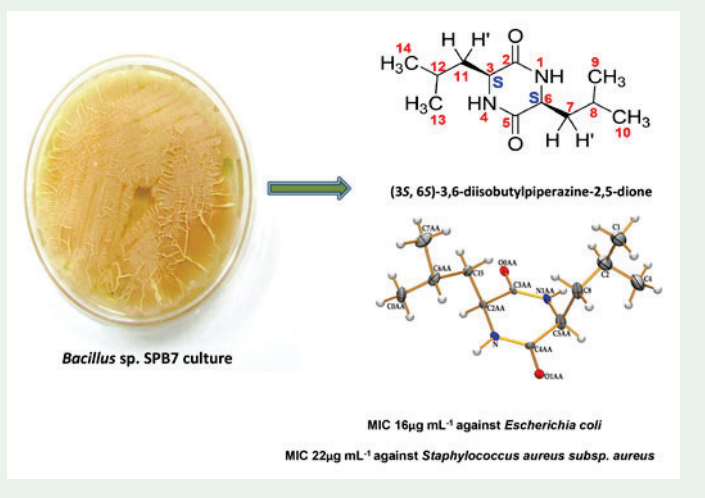
A diketopiperazine (3*S*, 6*S*)-3,6-diisobutylpiperazine-2,5-dione was isolated from a sponge-associated microbe for the first time and characterized by FTIR, HRESI-MS, ¹H, ¹³C NMR and 2D NMR. The source is novel for this compound. Single crystal XRD of this diketopiperazine obtained as a natural product was analysed for the first time and its melting point was determined to be 262 °C. MICs of this cyclic dipeptide against *Escherichia coli* and *Staphylococcus aureus subsp. aureus* were 16 µg mL⁻¹ and 22 µg mL⁻¹ respectively, the first report of antibacterial activity of this diketopiperazine.

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A STUDY ON THE INTERRELATIONSHIP OF MUSCULOSKELETAL SYMPTOMS WITH JOB DEMANDS AND JOB CONTENT: A CROSS-SECTIONAL STUDY ON NURSES

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ABSTRACT

The goal of this study was to examine the prevalence of musculoskeletal disorders (MSDs) among nursing personnel in different hospitals and nursing homes of West Bengal, India and to assess various work-related factors as the causative elements contributing towards MSDs. Maintaining the inclusion and exclusion criteria of this study, 58 registered nurses were chosen. Modified Nordic Questionnaire and Copenhagen Psychosocial Questionnaire (COPSOQ) were used. Percentage analysis, Correlation analysis, and χ^2 tests were performed. Almost 90% of the total population ($N = 58$) complained of various types of MSDs. The most prevalent one among them was lower back pain (LBP) (62.1%). LBP and ankle/feet pain showed significant correlations with some demand and job content scales of the COPSOQ. 74.1% and 25.9% of subjects belonged to the high and low demand category respectively, likewise, 75.9% and 24.1% were in the high and low job content category. For LBP and job demand, $\chi^2(1) = 10.771$, $p = 0.001$ and for LBP and job content, $\chi^2(1) = 4.383$, $p = 0.036$. MSDs are highly frequent in the nursing profession and LBP is the most recurrent one. High physical and psychological demands imposed stronger effects than job content factors on MSDs.

Keywords: Musculoskeletal disorders; nursing personnel; Modified Nordic Questionnaire; Copenhagen Psychosocial Questionnaire; lower back pain

INTRODUCTION

Musculoskeletal disorders (MSDs) are contemplated as one of the most powerful occupational disorders among different organized and unorganized sectors (Pira et al., 2018; Parno et al., 2017; Gangopadhyay et al., 2003). Pain, discomfort, stiffness, or numbness in the locomotor areas of the body can be collectively called musculoskeletal disorders, which when emanated from the factors related to work, is recognized as a work-related musculoskeletal disorder (Martinelli et al., 2004).

MSDs are one of the most frequently debated terms in almost every occupational organization to date. Still, it was found that nursing professionals are more prone to develop the symptoms of MSDs in which their daily work schedule plays a crucial role (Davis and Kotowski, 2015). It has also been evidenced that nursing personnel who were enwrapped in the duties for a long while had experienced a maximum rate of discomfort (Asuquo et al., 2021). Nurses' absenteeism, sick leaves, and failure to continue the task given are some of the most common ramifications triggered by musculoskeletal discomforts (Bernal et al., 2015; Menzel, 2008). Various studies have proclaimed that the nursing profession can be recognized as a challenging and exhausting occupation (Hart et al., 2014). Along with the long tiring shifts with shift rotations, they are subjected to various causative factors and risks which lead to accidents or protracted symptoms of musculoskeletal discomfort (Elbejjani et al., 2020). Understanding and evaluating the discomforts reported by the nurses, treating the enduring symptoms, searching for the deep-rooted causes, and eliminating them needs to be the topmost priority not only to encourage the nurses to re-join work but also to increase the productivity and quality of work (Yilmaz and Isik Andsoy, 2021). The involvement of multiple causative factors at the same time from the different grounds made the search difficult and time taking (López-González et al., 2021).

As it is known that MSDs are multifactorial health conditions and factors related to genetic and morphological structures are unalterable, the factors related to the specific type of the task or the biomechanical factors should be subjected to alterations (Asghari et al., 2019). With the increasing nursing population in the health sectors of India and with a growing patient load it became vital to find the discomfort scenarios extensively. More elaborate research needs to be done to detect the connection between the work demand and the contentment with the presence of discomforts. This study aimed to assess the prevalence of musculoskeletal discomfort among nursing personnel in West Bengal, India and to evaluate the relation of