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SYNTHESIS AND ANTI-BACTERIAL ACTIVITY OF SOME NOVEL SCHIFF'S BASES

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ABSTRACT : Some novel Schiff's bases were prepared by the reaction of 4-amino benzamide with benzoyl chloride forming N-benzoyl-4-amino benzamide, the later was reacted with different substituted benzaldehyde to give N-benzoyl-4-(substituted benzylideneamino) benzamide (1-6). The structures of the compounds synthesized identified by using spectral analysis methods (F.T-IR, ^{1}H-NMR and ^{13}C-NMR). The compounds (1-6) were tested for antibacterial activity against (*Staphylococcus aureus* ATCC-9144, *Staphylococcus epidermidis* ATCC-155, *Escherichia coli* ATCC-25922 and *Pseudomonas aeruginosa* ATCC-2853) using disc diffusion method. The minimum inhibitory concentrations (MICs) of the compounds also calculated by agar streak dilution method. The compounds show significant activity against the above strains of microbes.

Key words : Schiff's bases, amide, anti-bacterial, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Escherichia coli* and *Pseudomonas aeruginosa*.

INTRODUCTION

Schiff's bases are synthesized by the reaction of any primary amine R-NH2 reacts with an aldehyde or a ketone. Schiff's bases also known as imine or azomethine. They are used due to their excellent coordinative capability and have a wide variety of industrial applications in many fields such as anti-inflammatory (Sathe *et al*, 2011), analgesic (Sondhi *et al*, 2006; Pandey *et al*, 2011; Chandramouli *et al*, 2012; Chinnasamy *et al*, 2010), antimicrobial (Mounika *et al*, 2010; Venkatesh, 2011), anticonvulsant (Chaubey and Pandeya, 2012), antitubercular (Aboul-Fadl *et al*, 2003), anticancer (Miri *et al*, 2013; Ali *et al*, 2012), antioxidant (Wei *et al*, 2006), anthelmintic (Avaji *et al*, 2009), coordination (SelwinJoseyphus and Sivasankaran, 2008; Cotton and Wilkenson, 1988; Huheey, 1993), the metal-Schiff base complexes can also serve as efficient models for the metal containing sites in metallo-proteins and -enzymes (Jacobsen *et al*, 1991). Antifungal (Rai and Rachana, 2013), HIV (Pandeya, 1999; Kelley, 1995), anti-tuberculosis agent, antifertility (Omar and Mohamed, 2006), antioxidant (Zangade *et al*, 2015), herbicidal (Olie and Olive, 1984; Li *et al*, 2010) and antiproliferative (Hranjec *et al*, 2011), fluorescence (Rao *et al*, 2010), photoluminescence (Guha *et al*, 2011), a potentiometric cation caring (Ashraf *et al*, 2011), aggregation (Consiglio *et al*, 2012) and anthelmintic (Ashassi-Sorkhabi *et al*, 2006) properties scavengers of ROS (Ahmed and Ibrahim, 2015). *Escherichia coli* is the most common gram-negative bacteria to cause human infection. It is the cause of many diseases, ranging from minor disease to severe life threatening sepsis. Antimicrobial resistance in *E. coli* has been reported worldwide and increasing rates of resistance among *E. coli* is a growing concern in both developed and developing countries (Kibret and Abera, 2011). *Pseudomonas aeruginosa* is the most important types of gram-negative pathogenic bacteria to the human, as characterized by their ability to make different types of infection intensity ranging between lethal and moderate (Saleem, 2012). *P. aeruginosa* considered a major bacteria that causes of infections in worldwide, especially because of its high ability to resist antibiotics. It has been demonstrated that this intrinsic resistance emerges from the combination of unusually restricted outer-membrane permeability and secondary resistance mechanisms such as acquired resistance genes and energy-dependent multidrug efflux (Hancock and Speert, 2000). *Staphylococcus aureus* is a major gram-positive bacteria responsible for a multitude of human infections around the world. This diversity is related to a number of virulence factors that are coordinately expressed during different stages of infection (Saleem *et al*, 2016). *S. aureus* can exemplify better than any other human pathogen the adaptive evolution of bacteria in the antibiotic era, as it has demonstrated a unique ability to quickly respond to each new antibiotic with the development of a resistance