# Syntheses of some aliphatic amino-acid hydrazides.

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Article

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**Synthesis of Hydrazones from Amino Acids and their Antimicrobial and Cytotoxic Activities**

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Hydrazones **4a-4n** were synthesized from different amino acids with various aldehydes under reflux in methanol/ethanol. The structures of synthesized compounds were ascertained by elemental analysis and spectroscopic techniques. A comparative study of the antimicrobial activity and cytotoxicity was carried out of the N-protected amino acids, their esters, hydrazides, and the respective hydrazones, providing good results in cytotoxicity studies.

**Keywords:** Hydrazones; Cytotoxicity; Amino acids; Antimicrobial.

**INTRODUCTION**

Hydrazones are potential candidates for drug development because of their reactive azomethine group (−CO–NH–N=CH–).[1] Many researchers in the organic chemistry and medicinal fields have focused on the study of such molecules for years because of their important applications. Hydrazones have been found to exhibit diverse biological properties including antiviral,[2] antifungal,[3] antibacterial,[4] antimalarial,[5] antituberculosis,[6,7] inflammatory,[8] antiplatelet,[9] anticonvulsant,[10] antitumor,[11] and anticancer activities.[12,13] Among the significant pharmacophores in case of antiinflammatory and antiplatelet drug structures are hydrazine and acyl hydrazine moieties.[14,15] Hydrazones with the (=amino)-C group have been reported for their antitumor activities.[16]

Amino acids have been used in the synthesis of Schiff bases and their complexes. Such moieties have shown promising results in their application studies such as fluorescent properties[17] and biological activities over a wide range.[18–21] Hydrazones from N-protected amino acids are less reported. Protection via sulfonamide or benzoxide synthesis is the best strategy for this purpose. Generally, benzamide derivatives are known for their medicinal importance such as a muscle relaxant as well as antiemetic, antipsychotic, and antiarrhythmic agents.[22,23] Recently, hydrazone derivatives of benzoylprotected glycine have been reported for their anticonvulsant activities.[24]

Determination of the biological activity of synthetic and biological compounds has played a great role in drug design during the last few years. Antimicrobial activity screening is important in drug development, which in turn is helpful in curing human and animal diseases. Keeping in mind the significance of hydrazones and their amino acid derivatives in relation to their biological activities, this paper reports the synthesis of hydrazones from N-benzoylated amino acids and different substituted aldehydes and their biological evaluation.

**RESULTS AND DISCUSSION**

**Chemistry**

Amino acids (**1a–1c**) were converted to N-benzoylated amino acids by stirring their solutions in NaOH (10%) with benzoyl chloride for 3–4 h. A solid

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