

SYNTHESIS OF BIS-QUATERNARY SALTS OF AMMONIA FROM SUCCINIC ACID AND THEIR EVALUATION AS AGROCHEMICALS

NIRUPMA SOOD¹, SHARANJEET KAUR² & M.L SHARMA³

¹Chemistry Department, Khalsa College for Women, Civil Lines, Ludhiana, Punjab, India

^{2,3}Chemistry Department, Punjab Agricultural University, Ludhiana, Punjab, India

ABSTRACT

Quaternary ammonium salts, also known as quats, are the nitrogen containing compounds with four alkyl groups bonded to nitrogen which are highly reactive having potential in various fields like agrochemicals, pharmaceuticals, organic and bio-organic synthesis. These are applied growth retardants to control the size and shape of plants. In the present investigation, two series of eight new bis-quaternary salts of ammonia have been synthesised from succinic acid. In the first series tertiary amines were prepared by subjecting different benzaldehydes to Leuckart's reaction. In the second series, tertiary amines were prepared from different cinnamic acids through the formation of epoxy compounds with epichlorohydrin. Structures of tertiary amines thus prepared were confirmed by IR and NMR spectroscopy. These amines were then converted into their corresponding bis- quaternary salts of ammonia by reacting with succinyl chloride. Plant growth retardant activity of these salts was conducted on rice seeds (*Oryza sativa*, PR-116). All the compounds showed plant growth retardant activity. Compounds containing nitro group were found to possess enhanced retardant activity.

KEYWORDS: *Oryza Sativa*, Bis-Quaternary Ammonium Salts, Succinic Acid, Leuckart's Reaction