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REVIEW ARTICLE **OPEN ACCESS**

Succinct look to the ERM protein family in Earshot Impairment

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ABSTRACT
Noise Induced Hearing Loss (NiHL) is a one of the occupational diseases caused by an exposure of impulsive sound or continuous loud sound at various levels over an extensive period of time at different workplaces. Diverse functional proteins are responsible for hearing acuity which is present in Techtorial Membrane, Inner hair cells, Outer hair cells and stereocilia in the cochlea. The ERM protein family (ezrin, radixin and moesin) are chief structural designers of the cell cortex and they link plasma membrane phospholipids and proteins to the underlying cortical actin cytoskeleton. Cell cortex is a versatile and heterogeneous structure that leads to cell uniqueness and behaviour. ERM protein family is also a key member in the junction for the physical and functional organization of the cell cortex. Recent studies in several model systems have reported staggering on their regulation that leads to activation and deactivation with their various interacting partners. This review attained a brief look towards the ERM protein family in the ear deafness itinerary.
Keywords: Actin cytoskeleton, Ezrin, Moesin, NIHL, Plasma membrane, Radixin, Stereocilia.

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INTRODUCTION

Every day we encounter sound in our environment, the devices used for entertainment, automobiles, traffic, mines and industries. When an individual is exposed to harmful sounds that are too loud or get connected with these loud sounds over a long time and because of the sensitive structures of the inner ear can be damaged, causing Noise-Induced Hearing Loss (NIHL) [1]. NIHL can be caused by a one-time exposure to impulsive sound as well as by repeated exposure to continuous loud sound at various levels over an extensive period of time.

The incidence rate is astonishing that 360 million people in the world suffer from impaired hearing loss. This constitutes a substantial 5.3% of the world's population. In India, 63 million people (6.3%) endure from critical auditory loss in that, four in every 1000 children suffer from severe to profound hearing loss. Approximately occurrence of adult-onset deafness in India was found to be 7.6% and childhood onset deafness found to be 2%. More than 30 million Americans are exposed to hazardous sound levels on a regular basis and 10 million populations have noticed irreversible NIHL. Individuals of all ages, including children, adolescents, young adults, and older people, can develop NIHL with reference to noise level in habitat and at workplace [2].

Ear is one of the sensory organ which is responsible for hearing and balancing.

Hearing is a series of quickly occurring events in which the ear converts sound waves into electrical signals and causes nerve impulses to be sent to the brain, where they are interpreted as sound. The ear has three main parts: the outer, middle, and inner ear. Sound waves enter through the outer ear, called as pinna and reach the eardrum to vibrate. The vibrations are transmitted through three tiny bones in the middle ear called the ossicles. These three bones are named the hammer, anvil, and stirrup which is nothing but the malleus, incus, and stapes respectively. The stapes transmits the intensified vibrations through the oval window and into the fluid that fills the inner ear. The vibrations move through fluid in the snail-shaped auditory part of the inner ear called as cochlea. It also initiates the changes that lead to