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Editorial

Lacripep for Tears of Joy

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Lacritin is a human tear glycoprotein secreted mostly by lacrimal gland which promotes lacrimation and survival of corneal epithelial cell. In humans, it by encoded in LACRT gene [1]. It binds on cell surface heparan sulfate proteoglycan syndecan-1 and exposes N-terminal region of syndecan-1's core protein through heparanase/ G-protein-coupled receptor pathway. Then it signals through NFAT (nuclear factor of activated T-cells) and mTOR pathways (mechanistic target of rapamycin) for proliferation [2]. But, under stressful condition it signals through FOXO3 (Forkhead box O3) and PKB (Protein kinase B) pathways [3]. Functional studies suggest that tear lacritin plays a remarkable role in maintenance of ocular health [4,5]. Its secretion is down regulated in many eye diseases like corneal neuropathy [6], aqueous-deficient dry eye disease [7] etc. Bio therapeutic role of lacritin deserves attention in treatment of dry eyes because of its prosecretory properties. University of Virginia Health System researchers have developed a new potential synthetic lacritin peptide known as "lacripep", a product of Tear Solutions for the treatment for various eyes diseases especially for dry eyes [8]. However, lacripep entered into the clinical trial study since June 2017. The main strategy of this novel drug is to increase natural tear secretion instead of forming a just artificial tear layer over the cornea. Further it restores normal mitochondrial functions. This will promote maintenance of the corneal health. Unlike other routine ophthalmic topical drops, which wash away in the tears within few hours after its topical application, the lacripep stays for twenty four hours due to its slow diffusion rate in the lipid layer of the eye. It rescues inflamed cells by suppressing the vicious cycle that propagate inflammation in dry eye disease. Considering the positive effects, this synthetic lacritin will be a boon in clinical practice for dry eyes, after passing clinical trial and approval from the concern regulatory body. We are close to the day when patients with dry eye disease might say "Lacripep" for Tears of Joy.

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