

TCS/18/02 - Nasal cathelicidin expression in protection against Respiratory Syncytial Virus

Respiratory Syncytial Virus (RSV) is the biggest cause of lower airway infections in the world, killing ~100,000 children <5 years old every year, and affecting the elderly as severely as influenza. There are no effective treatments, and we don't understand why these age-groups get lethal infections when healthy adults have only mild cold symptoms. We discovered that an antimicrobial substance (cathelicidin), naturally-produced in our bodies, can protect against RSV. In humans and mice, cathelicidin stops RSV infection getting started, and, if infection does occur, it is less severe when more cathelicidin is made by the body. The amount of cathelicidin varies in different people's noses, where RSV virus enters. We propose that infants and the elderly are lacking effective "cathelicidin-shields" in their noses. This missing anti-viral barrier, and its effect on the bacteria that live in the nose, may increase the risk of serious RSV infection. This research will examine those ideas, and test whether ways of boosting cathelicidin production can help to protect against RSV. This research may help us understand who is at risk of severe RSV disease and develop ways to use cathelicidins and/or boost the body's production of cathelicidin, to prevent and/or treat this life-threatening infection.