cells are infected, they initiate an immune response by secreting various cytokines such as TNFa and IL6 in order to clear the infection.
Treatment of URTI using antibiotics is not recommended, and no good evidence exists for or against the effectiveness of over-the-counter cough medications for reducing coughing. According to a Cochrane review, a single oral dose of nasal decongestant in the common cold is modestly effective for the short-term relief of congestion in adults; however, data on the use of decongestants in children are insufficient. Mucolytics such as acetylcysteine and carbocystine are widely prescribed for upper and lower respiratory tract infection without chronic broncho-pulmonary disease. However, in 2013 a Cochrane review reported their efficacy to be limited. (https://en.wikipedia.org/ under wiki/Upper_respiratory_tract_infection).

Accordingly, there is a need for an alternative and/or additional treatment of respiratory tract infections, in particular for URTI; even more in particular of the buccal or oral cavity. Preferably such treatment prevents the onset of viral infections of the respiratory tract, in particular of the upper respiratory tract. Compositions used in such treatment should be safe and preferably without adverse effects.
The inventors surprisingly found that a composition comprising TGF prevents the onset of a viral infection of the respiratory tract and may solve one or more of the above-mentioned problems.

Summary

Accordingly, in one example the disclosure relates to a composition comprising Transforming Growth Factor (TGF) for use in the prevention of viral infection of the respiratory tract.
In one aspect, the present disclosure refers to a use of a synthetic composition comprising Transforming Growth Factor (TGF) in the manufacture of a medicament for the prevention and/or preventing further development of viral infection of the respiratory tract, preferably for the prevention and/or preventing further development of viral infection of the upper respiratory tract; wherein the TGF is TGF beta 2 (TGF β2).
In another example the disclosure relates to a composition comprising TGF, preferably TGF-β.
In another aspect, the present disclosure refers to a synthetic composition as described herein, wherein the composition comprises at least 20 nanogram TGF β2 per ml; and/or at least $1*10^{-5}$ ng TGF β2 per gram of protein.
In yet another example the disclosure relates to the use of such a composition in the prevention of a viral infection of the respiratory tract, preferably the upper respiratory tract.
In still another example the disclosure relates to method for the prevention of a viral infection of the respiratory tract comprising the administration of a composition comprising Transforming Growth Factor (TGF) to a subject in need thereof and to the

use of a composition comprising Transforming Growth Factor (TGF) in a method for the prevention of a virus infection of the respiratory tract in a subject in need thereof.
In another aspect, the present disclosure refers to a use of a synthetic composition as described herein in the manufacture of a medicament for the prevention of a virus infection of the respiratory tract.
In yet another aspect, the present disclosure refers to a use of a composition comprising TGF β2 as described herein in the manufacture of a medicament for the prevention of a virus infection of the respiratory tract.

Definitions

As used herein, a synthetic composition is a composition which is artificially prepared and is containing at least one compound that is produced ex vivo chemically and/or biologically and/or physically, e.g. by means of chemical reaction, enzymatic reaction or by a fractionation process. An example of such a fractionation process is a process wherein bovine milk is separated into different fractions like a fat and protein fraction. For the avoidance of doubt, a synthetic composition is not made *in vivo* by man or animal.

As used herein, the term "prevention" in relation to a given disease or disorder means preventing the onset of disease development if none had occurred, preventing the disease or disorder from occurring in a subject that may be predisposed to the disorder or disease but has not yet been diagnosed as having the disorder or disease, and/or preventing further disease/disorder development if already present.
TGF is referring to “transforming growth factor”, preferably a milk-derived TGF.
As used herein, the “respiratory tract” is defined as the subdivision of the respiratory system involved with the process of respiration in mammals. It is divided into the upper airways and lower airways. The upper airways or upper respiratory tract includes the nose and nasal passages, paranasal sinuses, the pharynx, oral cavity and the portion of the larynx above the vocal folds (cords). The lower airways or lower respiratory tract includes the portion of the larynx below the vocal folds, trachea, bronchi and bronchioles. The lungs are included in the lower respiratory tract and include the respiratory bronchioles, alveolar ducts, alveolar sacs, and alveoli.
“Respiratory tract infections” are defined as an illness caused by an infection of the respiratory tract, i.e. of the upper and/or lower respiratory tract.
As used herein, “upper respiratory tract infections” (URTI) are defined as an illness caused by an acute infection, which involves the upper respiratory tract, including the nose, mouth, sinuses, pharynx, larynx or trachea above the vocal folds.
Different TGF-β are synthesized as precursor molecules containing a pro-peptide region (which is also referred to as latency-associated peptide) in addition to the

Claims

1. Use of a synthetic composition comprising Transforming Growth Factor (TGF) in the manufacture of a medicament for the prevention and/or preventing further development of viral infection of the respiratory tract, preferably for the prevention and/or preventing further development of viral infection of the upper respiratory tract; wherein the TGF is TGF beta 2 (TGF β2).

2. The use of claim 1 for preventing the further development of viral infection in the upper respiratory tract.

3. The use of any of the preceding claims, wherein the TGF β2 is milk-derived TGF β2; preferably derived from mammal milk, more preferably bovine milk, sheep milk, goat milk, horse milk, camel milk, even more preferably bovine milk, most preferably cow's milk.

4. The use of any of the preceding claims, wherein the milk-derived TGF β2 is whey protein concentrate-derived (WPC-derived) or serum protein derived (SPC-derived), preferably wherein the milk-derived TGF is SPC-derived.

5. The use of any of the preceding claims, wherein the composition further comprises one or more of a carbohydrate fraction, a protein fraction and a lipid fraction, preferably wherein the composition comprises a carbohydrate fraction, a protein fraction and a lipid fraction.

6. The use of any of the preceding claims, wherein the amount of TGF β2 is one or more of

i. at least 10^{-7} wt% referred of the liquid composition;
ii. at least $0.5*10^{-5}$ g per gram of protein in the composition; and/or
iii. at least 0.01 nanogram per 1 ml of composition, preferably at least 1 nanogram/ml.

7. The use of any of the preceding claims, wherein the composition is an adult nutrition product.

8. The use of any of the preceding claims, wherein the composition is an infant formula.

9. The use of any of the preceding claims further comprising one or more nondigestible oligosaccharides, preferably wherein the non-digestible oligosaccharide is selected from the group consisting of fructo-oligosaccharides and galacto-oligosaccharides.

10. The use of any of the preceding claims, wherein at least 0.6 wt% of the fatty acid acyl groups present in the lipid fraction consists of 4 carbon atoms; and/or wherein at least 10 % of the fatty acid acyl groups present in the lipid fraction is a palmitoyl group ($CH_3(CH_2)_{14}C(O)$) and at least 30% of the palmitoyl groups is esterified to the sn-2 position of a triglyceride based on total palmitoyl groups.

11. The use of any of the preceding claims, wherein at least 20 wt% of the lipid fraction consists of milk fat, preferably at least 30 wt%, more preferably at least 40 wt%.

12. A synthetic composition as defined in any of the preceding claims, wherein the composition comprises at least 20 nanogram TGF β2 per ml; and/or at least $1*10^{-5}$ ng TGF β2 per gram of protein.

13. Use of a synthetic composition as defined in any one of the preceding claims in the manufacture of a medicament for the prevention of a virus infection of the respiratory tract.

14. Use of a composition comprising TGF β2 as defined in any one of the preceding claims in the manufacture of a medicament for the prevention of a virus infection of the respiratory tract.