CLAIMS

1. A method of producing an Enterovirus-like particle (EVLP) in a plant, a portion of a plant, or a plant cell comprising:

a) introducing into the plant, the portion of the plant, or plant cell a first nucleic acid and a second nucleic acid, the first nucleic acid comprising a first regulatory region active in the plant operatively linked to a first nucleotide sequence encoding an Enterovirus polyprotein, wherein the Enterovirus polyprotein consists of Enterovirus 71 polyprotein P1 and the second nucleic acid comprising a second regulatory region active in the plant and operatively linked to a second nucleotide sequence encoding one or more than one Enterovirus 71 3CD protease;

b) incubating the plant, portion of the plant, or plant cell under conditions that permit the expression of the first and second nucleic acids to produce the Enterovirus 71 polyprotein P1 and the one or more than one Enterovirus 71 3CD protease, the Enterovirus 71 polyprotein P1 being processed into structural proteins VP1, VP3 and VP0, or VP1, VP2, VP3 and VP4, thereby producing the EVLP.

2. The method of claim 1, further comprising the step(s) of:

(d) harvesting the plant, the portion of the plant, or plant cell; and/or

(e) purifying the EVLP.

3. The method of claim 1, wherein the ratio of introduced amounts of the first nucleic acid relative to the second nucleic acid is between 20:1 and 0.5:1.

4. The method of claim 1, wherein the Enterovirus polyprotein comprises structural proteins VP1, VP2, VP3, VP4, or a combination thereof.

5. The method of claim 1, wherein the first nucleic acid and the second nucleic acid are on separate nucleic acid constructs.

6. The method of claim 1, wherein the first nucleic acid and the second nucleic acid are on a same nucleic acid construct.

7. The method of claim 1, wherein in the step of introducing (step a), the nucleic acid is transiently expressed in the plant.

8. The method of claim 1, wherein, in the step of introducing (step a), the nucleic acid is stably expressed in the plant.

9. A method of producing an Enterovirus-like particle (EVLP) in a plant, portion of a plant or plant cell comprising:

a) providing the plant, the portion of the plant or plant cell comprising a first nucleic acid comprising a first regulatory region active in the plant, the portion of the plant or plant cell operatively linked to a first nucleotide sequence encoding an Enterovirus polyprotein, wherein

the Enterovirus polyprotein consist of Enterovirus 71 polyprotein P1 and a second nucleic acid comprising a second regulatory region active in the plant, the portion of the plant or plant cell operatively linked to a second nucleotide sequence encoding one or more than one Enterovirus 71 3CD protease;

b) incubating the plant, the portion of the plant or plant cell under conditions that permit the expression of the nucleic acids to produce the Enterovirus 71 polyprotein P1 and the one or more than one Enterovirus 71 3CD protease, the Enterovirus 71 polyprotein P1 being processed into structural proteins VP1, VP3 and VP0, or VP1, VP2, VP3 and VP4, thereby producing the EVLP.

10. The method of claim 9, further comprising the step(s) of:

(d) harvesting the plant, the portion of the plant, or the plant cell; and/or

(e) purifying the EVLP.

11. The method of claim 9, wherein the ratio of introduced amounts of the first nucleic acid relative to the second nucleic acid is between 20:1 and 0.5:1.

12. The method of claim 9, wherein the Enterovirus polyprotein comprises structural proteins VP1, VP2, VP3, VP4, or a combination thereof.

13. The method of claim 9, wherein the first nucleic acid and the second nucleic acid are on separate nucleic acid constructs.

14. The method of claim 9, wherein the first nucleic acid and the second nucleic acid are on the same nucleic acid construct.

15. A plant extract comprising an Enterovirus-like particles (EVLPs) produced by the method of claim 1 or 9.

16. A composition for use in inducing an immune response against Enterovirus in a subject, the composition comprising the plant extract of claim 15 and a pharmaceutically acceptable carrier.

17. The plant extract of claim 15 for use in inducing immunity to an Enterovirus infection in a subject.

18. The plant extract of claim 15, wherein the plant extract is for oral, intradermal, intranasal, intramuscular, intraperitoneal, intravenous, or subcutaneous administration.

19. A polyclonal antibody prepared using the plant extract as described in claim 15.

20. The method of claims 1 or 9, wherein the first nucleic acid sequence comprises the first regulatory region operatively linked with one or more than one comovirus enhancer, the nucleotide sequence encoding the Enterovirus polyprotein, and one or more than one amplification element, and a third nucleic acid encoding a replicase is introduced into the plant

or portion of the plant.

21. The method of claims 1 or 9, wherein the second nucleic acid does not comprise one or more than one amplification element or one or more comovirus enhancer.

22. A plant cell comprising a first nucleic acid and a second nucleic acid, the first nucleic acid comprising a first regulatory region active in the plant cell and operatively linked to a first nucleotide sequence encoding an Enterovirus polyprotein, wherein the Enterovirus polyprotein consists of Enterovirus 71 polyprotein P1, and the second nucleic acid comprising a second regulatory region active in the plant cell and operatively linked to a second nucleotide sequence encoding one or more than one Enterovirus 71 3CD protease.

23. A plant extract comprising an Enterovirus-like particle (EVLP), the EVLP comprising Enterovirus 71 structural proteins VP1, VP2, VP3 and VP4.

24. A plant cell comprising an Enterovirus-like particle (EVLP), the EVLP comprising Enterovirus 71 structural proteins VP1, VP2, VP3 and VP4.