What is claimed is

1. A polyphenol-oxidizer composition for gastrointestinal use as an antimicrobial, comprising:

   a combination of (i) a water soluble extract of a plant tissue comprising a polyphenol including a tannin, (ii) an exogeneous hydrogen peroxide, and (iii) inactivated enzymes from the plant tissue which otherwise cause degradation of the composition if the enzymes remain active;

   wherein, the extract has a sequestering effect on the hydrogen peroxide in the combination; and,

   the composition kills bacteria upon contact with the bacteria.

2. The composition of claim 1, wherein the polyphenol and the hydrogen peroxide combine to stabilize and concentrate reactive oxygen species in proximity to phenolic units in the composition.

3. The composition of claim 1, wherein the plant tissue comprises a component selected from the group consisting of rye seeds, mung beans, daikon skin, pomegranate, bearberries, aloe vera skin, organ pipe cactus, Chinese gall, oregano, persimmon fruit, wheat germ, barley seeds, coffee beans, green tea, black tea, punica granatus, tobacco, a succulent, and external plant tissues, roots, leafs, leaf cuticles, bark, fruit, rinds, and husks thereof.

4. The composition of claim 1, wherein the plant tissue comprises a combination of camellia sinensis and punica granatum.

5. The composition of claim 1, wherein the extract comprises a polyphenol selected from the group consisting of a lignin, a flavonoid, a hydroxycoumarin, and an alkaloid.

6. The composition of any of claims 1-4, wherein the composition is a dilute aqueous formulation having the extract at a concentration ranging from 3.9ug/ml to about 500ug/ml.

7. The composition of any of claims 1-5 for use in treatingan infection of, or damage to, the digestive system.

8. The composition of any of claims 1-5 for use in treating diarrhea.

9. The composition of any of claims 1-5 for use in treating water for ingestion in the gastrointestinal tract.

10. The composition of any of claims 1-5 for use in treating an infected gastrointestinal tissue.

11. The composition of any of claims 1-5 for use in stimulating growth in an animal by administering to the gastrointestinal tract of the animal.

12. The composition of any of claims 1-5 for use in producing a medicament for administration to a subject for use in treating a gastrointestinal disorder in a dose ranging in amount from 20 ug to 250 ug.

13. A kit comprising a dry, stable form of the compositions of any of claims 1-5, including instructions for hydrating the composition to produce a polyphenol-oxidizer solution.

14. The kit of claim 13, wherein the dry form of the reactive oxygen species includes a hydrogen peroxide generating material comprising a component selected from the group consisting of sodium percarbonate, potassium percarbonate, a carbamide peroxide, and urea peroxide.

15. The kit of claim 13, wherein the reactive oxygen species component includes a dry potassium percarbonate or sodium percarbonate.

16. A method of producing the polyphenol-oxidizer composition of any of claims 1-5, wherein the method comprises:

    choosing the plant tissue;

    denaturing an enzyme from the plant tissue, the denaturing including inactivating or removing active reducing agents or catalysts from the plant tissue;

    pulverizing the plant tissue;

    extracting the polyphenols from the plant tissue with a solvent to create an extract; and,

    adding a reactive oxygen species to the extract in an effective amount.

17. The method of claim 16, wherein the plant tissue comprises a component selected from the group consisting of rye seeds, mung beans, daikon skin, pomegranate, bearberries, aloe vera skin, organ pipe cactus, Chinese gall, oregano, persimmon fruit, wheat germ, barley seeds, coffee beans, green tea, black tea, punica granatus, tobacco, a succulent, and external plant tissues, roots, leafs, leaf cuticles, bark, fruit, rinds, and husks thereof.

18. The method of claim 16, wherein the plant tissue comprises a combination of camellia sinensis and punica granatum.

19. The method of claim 16, wherein the extract comprises a component selected from the group consisting of a tannin, a lignin, a flavonoid, a hydroxycoumarin, and an alkaloid.

20. A polyphenol-oxidizer composition for gastrointestinal use as an antimicrobial, comprising:

    a combination of (i) an extract of a plant tissue comprising a polyphenol selected from the group consisting of a tannin, a lignin, a flavonoid, a

hydroxycoumarin, and an alkaloid; (ii) an exogeneous hydrogen peroxide; and (iii) inactivated enzymes from the plant tissue which otherwise cause degradation of the composition if the enzymes remain active;

wherein, the extract has a sequestering effect on the reactive oxygen species in the combination and,

the composition kills bacteria upon contact with the bacteria.

21. The composition of any of claims 1-5 for use as an anti-inflammatory.

22. The composition of any of claims 1-5, wherein the plant tissue comprises punica granatum.

23. The composition of any of claims 1-5, wherein the plant tissue comprises Chinese gall.

We Claim:

1. An anti-bacterial composition consisting of a product prepared by:

a) combining pomegranate rind with water and heating at 80° C. to 150° C. to substantially denature enzymes endogenous to said pomegranate rind and

b) adding from 1% to less than 10% of hydrogen peroxide to the product obtained from part (a).

2. The anti-bacterial composition of claim 1, wherein the composition endogenously contains a component selected from the group consisting of a tannin, a lignin, a flavonoid, a hydroxycoumarin and an alkaloid.

3. The anti-bacterial composition of claim 1, wherein said composition is in a dose ranging from 20 μg to 250 μg.

4. The anti-bacterial composition of claim 1, wherein the heating in part (a) is carried out from 80° C. to 110° C.

5. The anti-bacterial composition of claim 1, wherein 1% to 2% of hydrogen peroxide is added in part (b).

6. A kit comprising a dry form of the anti-bacterial composition of any one of claims 1-5.

7. A method of treating bacteria-infected water, comprising administering to said water an effective amount of the anti-bacterial composition of any one of claims 1-5.

8. A method for producing an anti-bacterial composition, wherein the method comprises;

a) combining pomegranate rind with water and heating at 80° C. to 150 ° C. to substantially denature enzymes endogenous to said pomegranate rind and

b) adding from 16% to less than 10% of hydrogen peroxide to the product obtained from part (a).

9. The method of claim 8, wherein said heating in part (a) is carried out from 80° C. to 110° C.

10. The method of claim 8, wherein 1% to 2% of hydrogen peroxide is added in part (b).

11. The method of claim 8, wherein the method further comprises creating 20 µg to 250 µg dosage forms of said anti-bacterial composition.

12. An anti-bacterial composition consisting of a product prepared by:

a) combining pomegranate rind with water and heating at 80° C. to 150° C. to substantially denature enzymes endogenous to said pomegranate rind,

b) adding from 1% to less than 10% of hydrogen peroxide to the product obtained from part (a) and

c) filtering the product obtained from part (b).