WE CLAIM:

1. A binding system that selectively increases the bioactivity of a phenolic compounds at a target site, the system comprising:

a phenolic component comprising a tannin having a molecular weight ranging from about 500 Daltons to about 4000 Daltons; and,

hydrogen peroxide;

wherein,

the hydrogen peroxide is ~~releasably bound to~~ combined with the tannin at a tannin:peroxide weight ratio that ranges from about 1:1000 to about 10:1~~;~~

~~the binding system is bioactivated at a target site having an oxidoreductase enzyme that is expressed in response to a tissue damage of a subject;~~

~~the phenolic component binds to the target site selectively, the target site consisting of the damaged tissue; and,~~

~~the binding system contains no, or substantially no, unbound hydrogen peroxide prior to the bioactivating at the target site~~.

2. A binding system that selectively increases the bioactivity of a phenolic compound at a target site, the system comprising:

a phenolic component comprising a tannin having a molecular weight ranging from about 500 Daltons to about 4000 Daltons; and,

hydrogen peroxide;

wherein,

the hydrogen peroxide is ~~releasably bound to~~ combined with the tannin at a tannin:peroxide weight ratio that ranges from about 1:1 to about 1:50~~;~~

~~the binding system is bioactivated at a target site having an oxidoreductase enzyme that is expressed in response to a tissue damage of a subject, the oxidoreductase enzyme comprising a peroxidase or oxidase;~~

~~the phenolic component binds to a target site selectively, the target site consisting of the damaged tissue; and,~~

~~the binding system contains no, or substantially no, unbound hydrogen peroxide prior to the bioactivating at the target site~~.

3. A binding system that selectively increases the bioactivity of a phenolic compound at a target site, the system comprising a combination of:

a phenolic component comprising ~~a pomegranate extract, a green tea extract, or a combination thereof~~ an ellagitannin; and,

hydrogen peroxide;

wherein, the ratio of phenolic component to hydrogen peroxide ranges from about 1:2 to about 1:20 on a molar weight basis

~~the binding system is bioactivated at a target site having a peroxidase or oxidase that is expressed in response to a tissue damage;~~

~~the phenolic component binds to the target site selectively, the target site consisting of the damaged tissue; and,~~

~~the binding system contains no, or substantially no, unbound hydrogen peroxide prior to the bioactivating at the target site~~.

4. A stabilized reagent pair for aqueous transport to a target site, the reagent pair comprising:

a tannin having a molecular weight ranging from about 500 Daltons to about 4000 Daltons; and,

hydrogen peroxide;

wherein,

the hydrogen peroxide is ~~hydrogen bonded to~~ combined with the tannin at a tannin:peroxide weight ratio that ranges from about 1:1000 to about 10:1~~;~~

~~the binding system is bioactivated at a target site having an oxidoreductase enzyme; and,~~

~~the binding molecule binds to the target site selectively, the target site consisting of the damaged tissue and,~~

~~the binding system contains no, or substantially no, unbound hydrogen peroxide prior to the bioactivating at the target site~~.

5. A pharmaceutical formulation comprising the ~~reagant~~ reagent pair of claim 4 and a pharmaceutically acceptable excipient, wherein the tannin comprises a catechin, and the tannin:peroxide ratio ranges from about 1:10 to about 1:50~~, the oxidoreductase comprises a peroxidase; and, there is no, or substantially no, unbound hydrogen peroxide in the formulation~~.

6. A pharmaceutical formulation comprising the system of claim 1, 2, or 3 and a pharmaceutically acceptable excipient.

7. The system of claim 1, 2, or 3, wherein the phenolic component ~~comprises~~ is a hydrolysable tannin, a condensed tannin, or a combination thereof.

8. The system of claim 1, 2, or 3, wherein the phenolic component ~~comprises~~ is a flavanol.

9. The system of claim 1, 2, or 3, wherein the phenolic component ~~comprises~~ is a catechin.

10. The system of claim 1, 2, or 3, wherein the phenolic component ~~comprises~~ is gallic acid, epigallic acid, or a combination thereof.

11. The system of claim 1, 2, or 3, wherein the weight ratio of the tannin:peroxide ranges from about 1:1 to about 1:50.

12. A kit comprising the system of claim 1, 2, or 3, wherein the kit comprises

a dry form of the phenolic component; and,

a dry material for releasing hydrogen peroxide.

13. A kit comprising the system of claim 12, wherein the dry material for releasing hydrogen peroxide selected from the group consisting of sodium percarbonate, potassium percarbonate, an amino perhydrate, a carbamide peroxide, a magnesium peroxide, and urea peroxide, as well as instructions for mixing the components to create the system for administration and suggested dilution factors for various target sites, as

well as instructions for diluting the system for administration with suggested dilution factors for various target sites.

14. A use of the system of claim 1, 2, or 3, in the manufacture of a medicament for use as an antitoxin.

15. A use of the system of claim 1, 2, or 3, in the manufacture of a medicament for use as an anti-inflammatory.

16. A use of the system of claim 1, 2, or 3, in the manufacture of a medicament for use as an antimicrobial.

17. A composition comprising the system of claim 1, 2, or 3, for use in treating a gastrointestinal condition.

18. A use of the system of claim 1, 2, or 3, in the manufacture of a medicament for use in treating a damaged dermal tissue.

19. A use of the system of claim 1, 2, or 3, in the manufacture of a medicament for use in treating a damaged mucosal tissue.

20. A dietary supplement comprising the system of claim 1, 2, or 3, for use in promoting weight gain in an animal.

21. The system of claim 1, 2, or 3, wherein the phenolic component is a punicalagin.