We claim:

1. A vaccine comprising an adjuvant composition and an antigen,
   wherein the adjuvant composition comprises a carbohydrate linked to chitosan to form a Schiff base,
   wherein the carbohydrate is an open-ring mannose moiety,
   and wherein the vaccine is formulated for administration in food or drinking water.
2. The vaccine of claim 1, wherein the Schiff base is not reduced.
3. The vaccine of claim 1, wherein the Schiff base is reduced.
4. The vaccine of any one of claims 1-3, further comprising an enhancing molecule.
5. The vaccine of claim 4, wherein the enhancing molecule is saponin, toll-like receptors, the B subunit of a bacterial toxin, bacterial toxins, CpG motifs, liposomes or monophosphoryl lipid A.
6. The vaccine of claim 4, wherein the enhancing molecule is tetanus toxoid, cholera toxin B subunit, heat labile enterotoxin B subunit, or tripolyphosphate.
7. A vaccine of any one of claims 1-6, wherein the antigen comprises a microbe.
8. The vaccine of claim 7, wherein the microbe is *Salmonella, Escherichia, Shigella, Bordetella, Clostridium, Mycoplasma, Staphylococcus, Streptococcus, Bacillus, Influenza*, or *Eimeria*.
9. The vaccine of claim 7 or 8, wherein the microbe is inactivated or killed.
10. The vaccine of claim 9, wherein the microbe is killed using formaldehyde, glutaraldehyde or formalin.
11. Use of the vaccine formulation of any one of claims 1-10 in the manufacture of a medicament for enhancing the immune response of a subject to an antigen.
12. The use of claim 11, wherein the immune response includes an enhanced antibody response as compared to administering the vaccine without an adjuvant.
13. The use of claim 12, wherein the enhanced antibody response is an enhanced secretory IgA antibody response as compared to administering the antigen without an adjuvant.
14. The use of any one of claims 11-13, wherein the subject is a mammal or poultry.
15. The use of any one of claims 11-14, wherein the route of administration is oral.
16. The use of any one of claims 11-15, wherein the vaccine formulation is administered in the food or drinking water.