SUMMARY

[004a] In a first aspect of the present disclosure, there is provided a food contact article having at least one food contact surface, wherein the at least one food contact surface comprises at least 50 weight percent of at least one biodegradable polymer and from about 0.1 weight percent to about 1.0 weight percent of at least one antimicrobial agent.

[005] In a first example, the present disclosure provides a food contact article. According to one example, the food contact article includes at least one food contact surface. This at least one food contact surface is made up of at least 50 weight percent of at least one biodegradable polymer and from about 0.1 weight percent to about 1.0 weight percent of at least one antimicrobial agent.

[006] In some examples, the food contact article is preferably a food container, a cup, an eating utensil, or a food packaging film.

[007] According to certain examples, the food contact article is preferably made up of a biodegradable substrate having a coating formed thereon. This coating makes up the food contact surface and is preferably made up of at least 50 weight percent of the at least one biodegradable polymer and from about 0.1 weight percent to about 1.0 weight percent of at least one antimicrobial agent. More preferably, the biodegradable substrate is made up of paperboard.

[008] In certain examples, the food contact surface is preferably made up of at least 75 weight percent of the at least one biodegradable polymer and more preferably from about 80 to about 99.9 weight percent weight percent of the at least one biodegradable polymer.

[009] In some instances, the antimicrobial agent is preferably selected from the group consisting of anti-bacterial agents, anti-fungal agents, anti-parasitic agents, anti-algal agents, anti-prion agents, and combinations thereof.

[010] In certain preferred examples, the antimicrobial agent is made up of lysozyme in an amount from about 0.1 to about 1.0 weight percent of the food contact article. Further, in certain examples, the food contact article also includes a second antimicrobial agent

selected from the group consisting of anti-bacterial agents, anti-fungal agents, anti-parasitic agents, anti-algal agents, anti-prion agents, and combinations thereof.

[011] In accordance with certain examples, the antimicrobial agent is preferably applied as a spray on the at least one food contact surface. In other examples, the

antimicrobial agent may be applied as a coating. In still other examples, the antimicrobial agent may be applied by dipping the food contact article into a mixture of the antimicrobial agent and allowing the antimicrobial agent to be absorbed by the food contact surface.

[012] In certain examples, the at least one biodegradable polymer is preferably selected from the group consisting of polyhydroxyalkanoates, poly(butylene succinate), poly(butylene succinate-co-adipate), poly(butylene adipate-co-terephthalate, poly(caprolactone), poly(lactic acid), cellulose esters, thermoplastic starch, and mixtures thereof. More preferably, the at least one biodegradable polymer comprises polyhydroxyalkanoates.

[013] According to certain examples, the polyhydroxyalkanoates are preferably made up of a copolymer made up of from about 75 to about 99.9 mole percent monomer residues of 3-hydroxybutyrate and from about 0.1 to about 25 mole percent monomer residues of a second hydoxyalkanoate having from 5 to 12 carbon atoms.

[014] In certain other examples, the polyhydroxyalkanoates are preferably made up of a terpolymer made up from about 75 to about 99.9 mole percent monomer residues of 3-hydroxybutyrate and from about 0.1 to about 25 mole percent monomer residues of 3-hydroxyhexanoate, and from about 0.1 to about 25 mole percent monomer residues of a third hydoxyalkanoate having from 5 to 12 carbon atoms.

[015] In some instances, the polyhydroxyalkanoates preferably have an initial weight average molecular weight from about 50,000 to about 4,000,000 daltons, more preferably from about 100,000 to about 3,000,000 daltons, and most preferably from about 100,000 to about 2,000,000 daltons.