Molecular Cocktails: Foams & Airs

Foams and airs are often utilised to modify the texture and flavour of cocktails. They are usually created by the use of a number of agents broadly referred to as surfactants. Both the agents and techniques used affect the type of foam created.

**THE METHOD**

1. A surfactant is added to the cocktail mixture, or the liquid from which the foam will be made. A number of different agents can be used as surfactants (see below).

2. The foam can be generated using a hand blender, or shaking in a cocktail shaker. Another method is to use a cream whipper, which forces nitrous oxide ($N_2O$) into the liquid.

**AGENTS TO MAKE FOAMS**

The agent chosen depends on the type of foam required. Below are four common agents used to create cocktail foams.

- **Egg White**
  - 10% protein.
  - Mousse-like foam.

- **Lecithin**
  - From egg yolk or soy.
  - Makes big bubbles.

- **Agar-Agar**
  - Seaweed extract.
  - Wet, sloppy foam.

- **Gelatine**
  - From animal collagen.
  - Stable, elastic foam.

**THE SCIENCE**

- **A.X. Fizz**
  - Amaretto and Xantè pear liqueur shaken with lemon, sugar and soya extract. Long and fresh like the Prince of Bel Air.

- **Hydrophilic Section**
  - Surfactant molecules contain both hydrophilic (water-loving) and hydrophobic (water-hating) regions. They arrange themselves around air bubbles in the water, with the hydrophilic sections dissolving in water and helping to stabilise the bubbles, preventing them from popping.

- **Hydrophobic Section**
  - Surfactants stabilise air bubbles.

**SHAKER**

- Aerates the cocktail to generate foam, but also chills. Chilling by shaking occurs more quickly than chilling by stirring.

**HAND BLENDER**

- Whips air in to generate the foam. Most useful when the foam is being generated separate from the cocktail.

**$N_2O$ WHIPPER**

- Uses $N_2O$ cartridges; pressure in the whipper can be up to 6 times atmospheric pressure, making $N_2O$ dissolve.