Periodic graphics

A collaboration between C&EN and Andy Brunning, author of the popular graphics blog Compound Interest

THE CHEMISTRY OF BITTERS

Originally used as medicines, bitters are now popular cocktail flavorings. This graphic gives you a taste of the different types of bitters and the compounds that lend them their distinct tastes.

TYPES OF BITTERS

Bartenders everywhere use a dash or two of bitters to flavor cocktails. Bitters include water and alcohol; botanical ingredients are soaked in the alcohol to extract compounds for flavoring. Some types of bitters (top) are paired with their key botanical ingredients (bottom) below.

AROMATIC

Gentian roots

FRUIT

Cherries

CHOCOLATE

Cocoa

CELYER

Celery seeds

CITRUS

Citrus peels

SPICED

Clove

SPICY

Chilies

FLORAL

Chamomile

Commercial bitters contain many different botanical ingredients—and a multitude of compounds. For example, Angostura bitters are said to contain over 40 ingredients; the exact blend is a closely guarded secret.

COMPOUNDS IN BITTERS

GENTIAN ROOTS

AMAROGENIN

Centian root, one of the key ingredients in Angostura bitters, contains bitter compounds including amarogentin.

CITRUS FRUITS

NARINGIN

Bitter compounds extracted from citrus fruit peels include naringin, found in particularly high levels in grapefruits.

CASCARILLA

CASCARILLIN

Cascara bark is another common ingredient in bitters. It contains cascariolin, a diterpenoid compound with a bitter taste.

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