

# PHYTOCANNABINOID GUIDE

## BIOSYNTHESIS, NAMING, AND NUMBERING

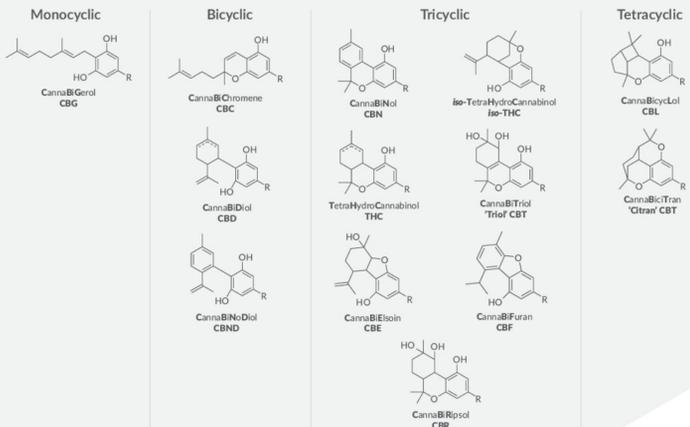
### NAMING CONVENTIONS

When naming phytocannabinoids, the prefix "cannabi" always appears in the main scaffold which drives the name and acronym of each compound.<sup>1</sup> The resorcinol root will designate the original C5 series and its C3 and C1 homologs. Listed here are the main scaffolds observed in phytocannabinoids. Because of the prevalence of the olivetolic root, the standard names will all contain the suffix -OL or -NOL, with a few exceptions. When describing the C3 and C1 homologs, the scaffold name is amended by dropping the -OL and replacing the suffix with -VARIN/VARINOL (C3) or -ORCIN/ORCINOL (C1). The orcinolic series is unique in that the suffix has also been placed within the scaffold name (-ORC- as in cannabichromene → cannabinorchromene).

#### Resorcinol Root Name



#### Main Scaffold Motifs and Names

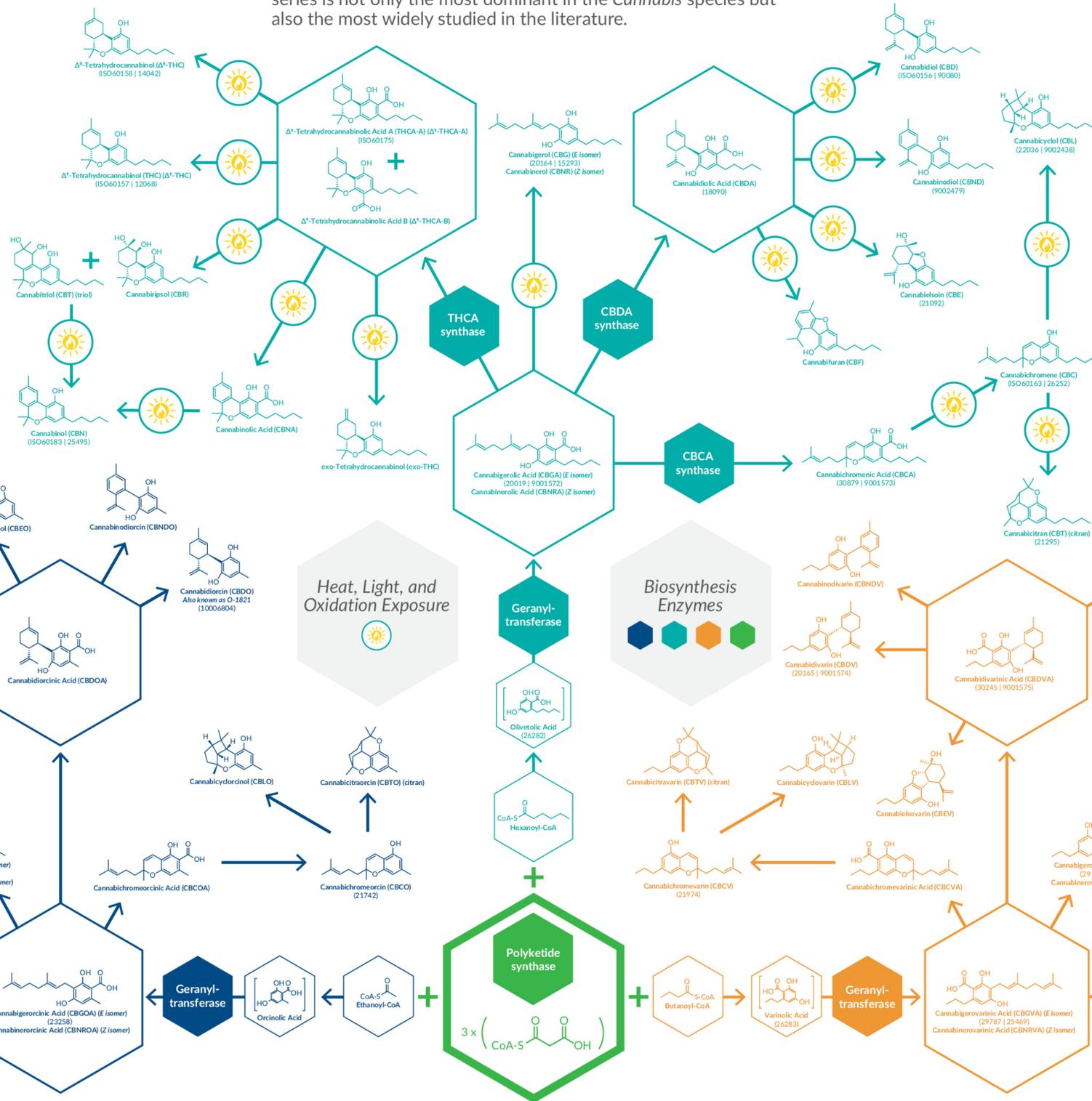


"M" is indicative of methyl ester when added to the end of the acronym (e.g., CBDM = cannabidiol methyl ester). "A" is indicative of the carboxylated olivetolic acid and is added to the very end of the acronym (e.g., THCA = tetrahydrocannabinolic acid).

1. Brenneisen, R. Chemistry and analysis of phytocannabinoids and other Cannabis constituents. *Marijuana and the Cannabinoids*. ElSohly, M.A., editor, Humana Press (2007).

### CLASSIC OLIVETOL SERIES

Olivetolic phytocannabinoids are considered classic, as these are the compounds that are ubiquitous to all varieties of marijuana. This series is not only the most dominant in the *Cannabis* species but also the most widely studied in the literature.

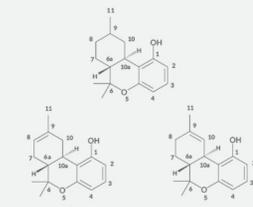


### NUMBERING CONVENTIONS

The two most common conventions for numbering THC are the dibenzopyran and monoterpene systems.<sup>2,3</sup> The biphenyl and Lord Alexander Todd numbering systems are older and less common.<sup>2,3</sup> A simple terpenoid numbering system is used for CBC, CBG, CBE, and CBL structures.<sup>3,4</sup>

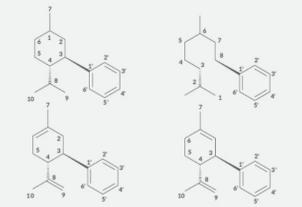
#### Most Common Systems

##### Dibenzopyran Numbering



Dibenzopyran numbering designates the double bond of interest as  $\Delta^1$  or  $\Delta^2$ .

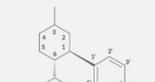
##### Monoterpene Numbering



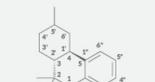
Monoterpene numbering designates the dibenzopyran  $\Delta^1$  configuration as  $\Delta^1$ . The dibenzopyran  $\Delta^2$  configuration is  $\Delta^1$  (or  $\Delta^2$ ).

#### Older/Less Common Systems

##### Biphenyl Numbering

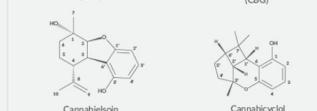
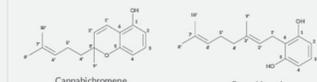


##### Todd Numbering



#### Terpenoid System

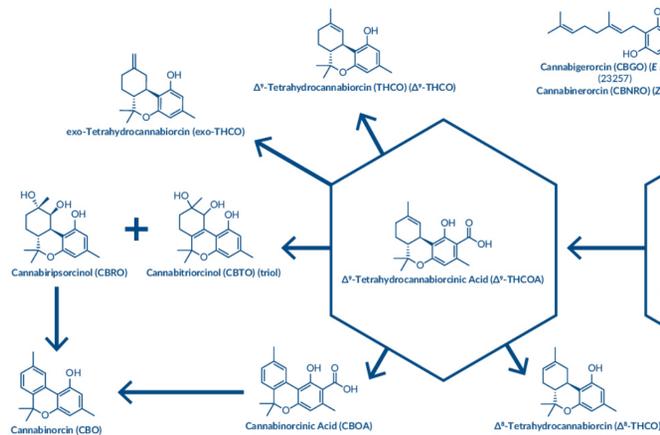
##### Terpenoid Numbering



2. Mechoulam, R. and Gaoni, Y. *Fortschr. Chem. Org. Naturst.* 25, 175-213 (1967).  
 3. ElSohly, M.A. and Slade, D. *Life Sci.* 78(5), 539-548 (2005).  
 4. Hanuš, L.O., Meyer, S.M., Muñoz, E., et al. *Nat. Prod. Rep.* 33(12), 1357-1392 (2016).

### ORCINOL SERIES

Orcinolic phytocannabinoids have been identified in Nepalese and Brazilian samples but are also found as major compounds in non-*Cannabis* species such as *Rhododendron*.



### VARINOL SERIES

Varinolic cannabinoids were once rare but are now targets of selective breeding. They have also been exhibited in higher abundance in *C. indica* over *C. sativa*.

