Chemical composition

In this guide

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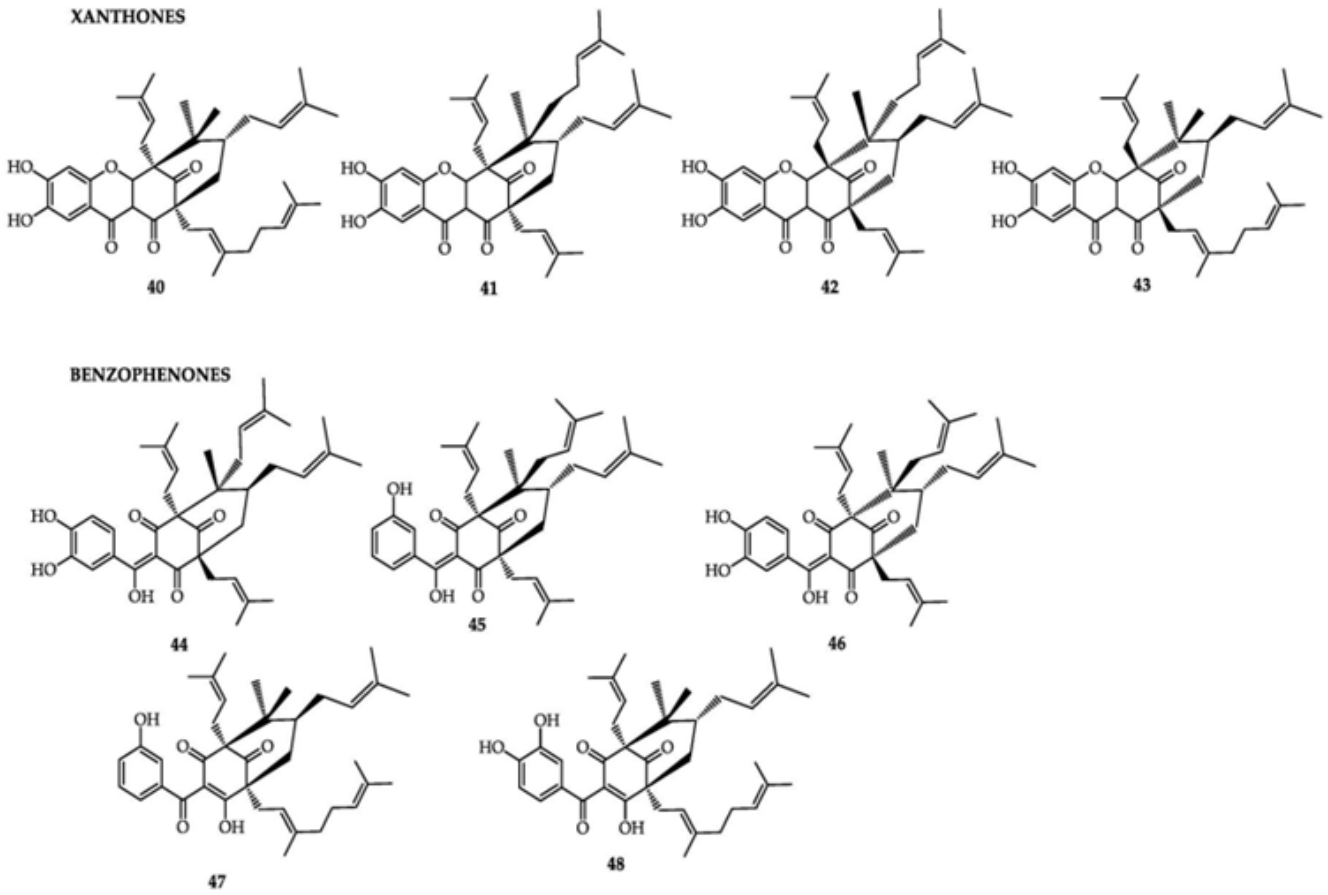
11. The bioactive compounds which are extracted and isolated from *G. cambogia* are shown in Table 1 and Figure 1.

Table 1 - list of bioactive compounds from plant parts of G. cambogia and their related bioactivities (reproduced from Espirito Santo et al., 2020).

Xanthones	**Plant part**	**Activity**
Garbogiol	Roots	Inhibition of α-glucosid
Rheedia xanthone A	Peel	Not applicable*
Oxy-guttiferone i	Fruits	Not applicable*
Oxy-guttiferone k	Fruits	Not applicable*
Oxy-guttiferone k2	Fruits	Not applicable*
Oxy-guttiferone m	Fruits	Not applicable*
Benzophenones	**Plant part**	**Activity**
Garcinol	Peel	Anticancer, anti-inflammatory, antiparasitic, action on nervous system
Isogarcinol	Peel	Anticancer, anti-inflammatory, antiparasitic, action on nervous system
Guttiferone i	Fruits	Not applicable*
Guttiferone n	Fruits	Not applicable*

Guttiferone j	Fruits	Not applicable*
Guttiferone k	Fruits	Topoisomerase II inhibitor
Guttiferone m	Fruits	Topoisomerase II inhibitor
Organic acids	**Plant part**	**Activity**
Heterocyclic amines	Fruits	Antiobesity
Tartaric acid	Fruits	Not applicable*
Citric acid	Fruits	Not applicable*
Malic acid	Fruits	Antimicrobial
Garcinialactone	Fruits	Not applicable*



This figure shows 9 chemical structures of the xanthone and benzophenone classes of bioactive compounds from G. cambogia (reproduced from Espirito Santo et al., 2020). The figure is produced in black line and text.

Figure 1 - chemical structures of the xanthone and benzophenone classes of bioactive compounds from G. cambogia. Xanthones: 40) oxy-guttiferone-i; 41) Oxy-guttiferone k; 42) Oxy-guttiferone k2 and 43) Oxy-guttiferone k. Benzophenones: 44) guttiferone-I; 45) guttiferone-j; 46) guttiferone-k; 47) guttiferone-n and 48) guttiferone-m (reproduced from Espirito Santo et al., 2020).

12. The HCA present in *G. cambogia* is a “potent” and “competent” inhibitor of adenosinetriphosphate (ATP) citrate lyase, which is a key enzyme in the synthesis of fatty acids, cholesterol, and triglycerides. It also regulates the level of serotonin, which has been associated with satiety, increased oxidation of fat, and decreased gluconeogenesis (Semwal et al., 2015; Preuss et al., 2004). HCA compromises a citric acid with a hydroxyl group at the second carbon. HCA has two diastereomers as there are two chiral centres, as such there are four stereoisomers of HCA, compromising two pairs of enantiomers (see Figure 2). Each of the stereoisomers can form a γ-lactone ring and in general solution, HCA is a mixture of non-lactone and lactone forms (Yamada et al., 2007).

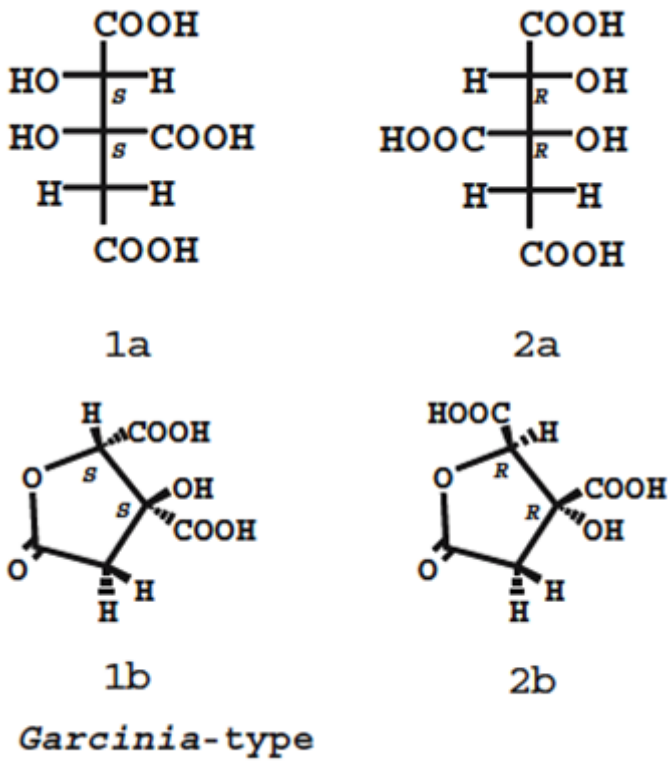


Figure 2 - Structures of HCA derived from Garcinia ssp. Upper and bottom structures show the non-lactone and lactone forms, respectively. (2S,3S)-HCA (a mixture of 1a and 1b) is found in G. cambogia. The other isomers (2R,3R)-HCA (a mixture of 2a and 2b) and (2R,3S)-HCA have not been isolated from natural sources (reproduced from Yamada et al., 2007). The figure is represented in black line and text.

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