



## Pyrethrins vs. Pyrethroids

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All pesticide products on the Cannabis Guide List contain active ingredients that are exempt from the requirement of a pesticide residue tolerance. The list features several naturally derived pyrethrin-containing products. Currently, pyrethrins are exempt from the requirements of tolerances when applied to growing crops in accordance with good agricultural practices. Pyrethrins are botanical insecticides that come from the pyrethrum flower, *Chrysanthemum cinerariaefolium*.

In contrast, the Guide List contains no pyrethroid-containing products. Pyrethroids are synthetic compounds and are not exempt from the requirement of a residue tolerance. They are not allowed in the production of cannabis. Do not use products containing pyrethroids.

### What are Pyrethrins and Pyrethroids?

Pyrethrins and pyrethroids are insecticides included in over 3,500 registered products, many of which are used widely in and around households, including on pets and in treated clothing, in mosquito control, and in agriculture. The use of pyrethrins and pyrethroids has increased during the past decade with the declining use of organophosphate pesticides, which are more acutely toxic to birds and mammals than the pyrethroids.

This change to less acutely toxic pesticides, while generally beneficial, has introduced certain new issues. For example, residential uses of pyrethrins and pyrethroids may result in urban runoff, potentially exposing aquatic life to harmful levels in water and sediment.

**Pyrethrins are botanical insecticides** derived from chrysanthemum flowers most commonly found in Australia and Africa. They work by altering nerve function, which causes paralysis in target insect pests, eventually resulting in death.

**Pyrethroids are synthetic chemical insecticides** whose chemical structures are adapted from the chemical structures of the pyrethrins and act in a similar manner to pyrethrins. Pyrethroids are modified to increase their stability in sunlight. Most pyrethrins and some pyrethroid products are formulated with synergists, such as piperonyl butoxide and MGK-264, to enhance the pesticidal properties of the product. These synergists have no pesticidal effects of their own but enhance the effectiveness of other chemicals.