

# Farming

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## ANTI- INFLAMMATORY COMPOUNDS DERIVED FROM PLANTS

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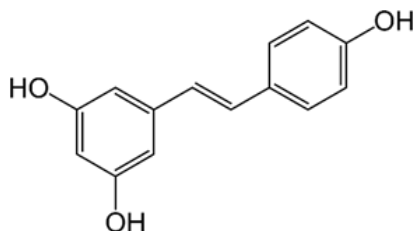
Several disorders including asthma, type-2 diabetes, inflammatory bowel disorders, arthritis, neurodegenerative diseases, and cancer are linked to inflammatory responses. The strategies to curb inflammation include NSAIDS (non-steroidal anti-inflammatory drugs) and immunosuppressants, however, these strategies have several side effects and are not effective to a great extent. As plants have been explored prominently in the traditional use of medicine since ancient times, several pharmacologically active plant-derived components have been studied and hence, established as effective anti-inflammatory agents.

The prominent plant-derived anti-inflammatory compounds include:

- Curcumin
- Resveratrol
- Colchicine
- Capsaicin
- Quercetin

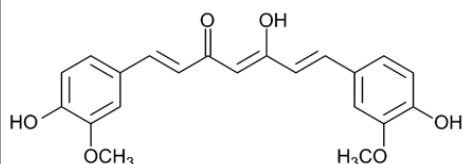
## RESVERATROL

**Resveratrol protects the body from free radicals and cellular damage by suppressing IL-1  $\alpha$  (interleukin-1  $\alpha$ ), IL-6 (interleukin-6), and TNF-  $\alpha$  (tumor necrosis factor-  $\alpha$ )**



Major sources:  
Grapes (*Vitis vinifera*)  
Cranberry (*Vaccinium macrocarpon*)  
Peanut (*Arachis hypogaea*)

## CURCUMIN



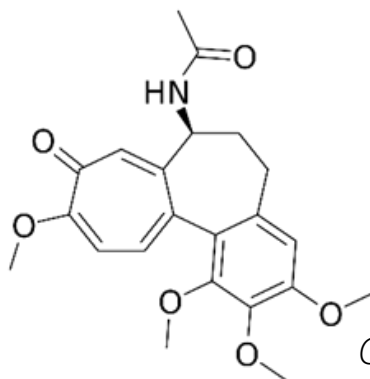
Major sources:  
Turmeric (*curcuma longa*)  
Mango ginger (*curcuma amada*).

**Curcumin helps to suppress the major molecules involved in inflammation including cytokines, chemokines and cyclooxygenase (COX) enzymes**



## COLCHICINE

**Colchicine interrupts the inflammatory cell activities and cytokine release. It suppresses interleukin-1 $\beta$  and interleukin-18, thereby showing anti-inflammatory effects**

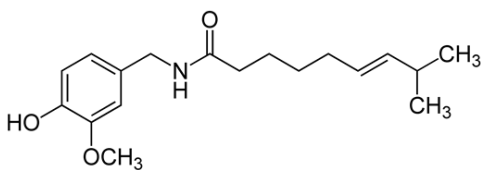


Major sources:  
*Colchicum autumnale*  
*Gloriosa superba*



## CAPSAICIN

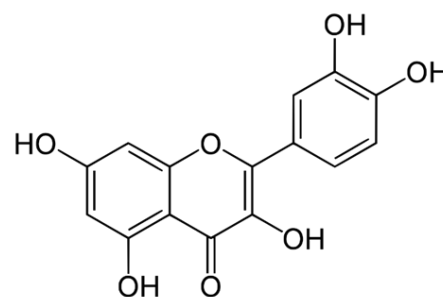
Capsaicin exhibits anti-inflammatory effects by inhibiting COX-2 (cyclooxygenase-2) enzyme and inactivating NF- $\kappa$ B (nuclear factor kappa B)



Major sources:  
Chili peppers *Capsicum annuum* such as jalapenos

## QUERCETIN

Quercetin inhibits the production of lipopolysaccharide (LPS)- induced TNF- $\alpha$  (tumor necrosis factor-  $\alpha$ ) and inflammation producing enzymes, COX and lipoyxygenase



Major sources:  
Onions (*Allium cepa*)  
Kale (*Brassica oleracea* var. *sabellica*)  
Cherry tomatoes (*Solanum lycopersicum* var. *cerasiforme*)  
Broccoli (*Brassica oleracea* var. *italica*)  
Apples (*Malus domestica*)  
Rosehip (*Rosa canina* L.)