

## Review article

### ANTIOXIDANT EFFECT OF MINT

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#### ABSTRACT

Mint has been used since prehistoric times for various purposes such as in medicines, cosmetics, and food items. Various benefits of mint are due to the presence of different components such as menthol, menthone, and rosemarinic acid. Mint also possesses antioxidant potential due to which it is being widely studied and used for the prevention of various diseases, such as the prevention of hepatotoxicity.

**Key Words:** Medicines, Cosmetics, Menthol, Menthone

doi: <https://doi.org/10.51127/JAMDCV3I4RA01>

#### How to cite this:

Khalid S, Qureshi HJ. Antioxidant effect of mint. JAMDC. 2021;3(4): 175-177  
doi: <https://doi.org/10.51127/JAMDCV3I4RA01>

### INTRODUCTION

Mint belongs to the family Lamiaceae.<sup>1</sup> It has 25 different species.<sup>2</sup> The most common varieties in Pakistan are *Mentha piperita*, *Mentha Officinalis*, *Mentha pulgium*, *Mentha longifolia*, *Mentha royleana* and *Mentha arvensis*. *Mentha arvensis* is widely cultivated all across Pakistan. *Mentha arvensis* is called pudina in the Tamil language. *Mentha arvensis* possesses many important ingredients such as menthol, sesquiterpenes menthone, flavonoids, tannins and carotenoids, etc. Among these, flavonoids, phenolic acids and triterpenes possess antioxidant potential. It is cultivated worldwide because of its various benefits. It is used in the food industry. It is used to add flavors in toothpastes<sup>3</sup> and chew gums. Due to its unique smell, it is also used for aromatherapy.<sup>4</sup> It is also an important ingredient in many medicines.<sup>5</sup> Menthol is an important component of mint which is responsible for the characteristic fragrance and taste of the mint. Mint is also used for the preparation of herbal teas. It has medicinal importance too. It is used as antiviral<sup>6</sup>, antimicrobial<sup>7,8</sup>, anticancer<sup>9</sup>, and anti-inflammatory agent.<sup>10</sup>

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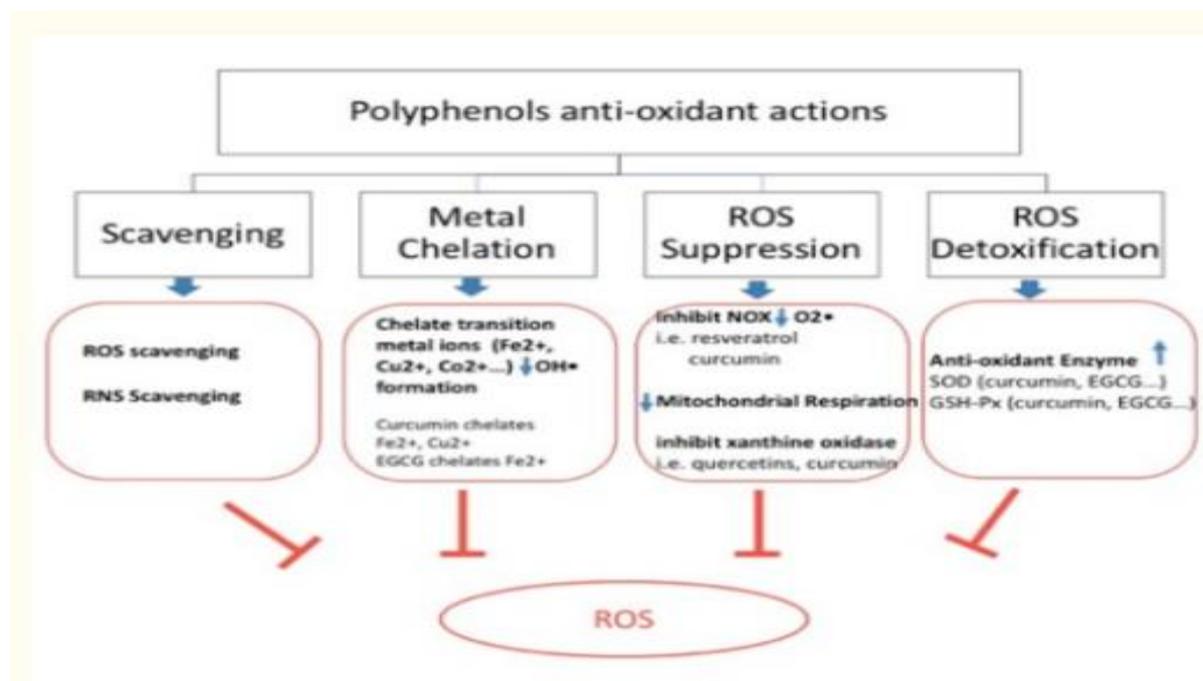
It has a carminative effect and is used for the treatment of diarrhea, nausea and inflammatory bowel syndrome.<sup>11</sup>

Because of various benefits, fewer side effects, cost-effectiveness and easy availability, mint species are being researched for their usage in medicine for the prevention of various diseases.

A lot of work both nationally and internationally has been done previously to study the antioxidant role of mentha species. These antioxidants were studied for their hepatoprotective effects also.

### DISCUSSION

The antioxidants role of mint has been studied widely. It has been found that mint is hepatoprotective because of its antioxidant potential. A study was conducted in Pakistan by Ahmed et al, on nine different species of mint. Those included *Mentha suaveolens*, *Mentha royleana*, *Mentha spicata*, *Mentha arvensis*, *Mentha Officinalis*, *Mentha citrata*, *Mentha piperita*, *Mentha longifolia* and *Mentha Pulgium*.<sup>12</sup> Antioxidant effects of those nine species were studied. It was found that those plants possessed phenolic compounds. The antioxidants, thus, delay or prevent the oxidation process.<sup>13</sup> Antioxidants also possess the ability to increase the release of superoxide dismutase, which also can



**Figure 1.** The antioxidant action of polyphenols.<sup>17</sup>

scavenge free radicals.<sup>14</sup> Those antioxidants also could increase the release of superoxide dismutase. Which also could scavenge free radicals.<sup>15</sup>

Another study was conducted by Wani et al, (2018) on the role of mint. They found that *Mentha arvensis* possessed flavonoids and phenols. These components could scavenge free radicals. These also could convert  $Fe^{+3}$  to  $Fe^{+2}$ . Hence, in this way, they reduced the oxidized metabolites of the lipid peroxidation process.

Polyphenols are the most potent antioxidants in the mentha species. A total of 60 % of polyphenols are flavonoids while 40% of polyphenols are phenolic acids.<sup>16</sup> Flavonoids include luteolin, menthoside, rutin hesperidin, etc. Phenolic acids include lithospermic acid, phytosterols Daucosterol, etc. Polyphenols can increase the number of antioxidants.<sup>17</sup> They scavenge iron and copper ions.<sup>18,19</sup> They inhabit xanthine oxidase and Nicotinamide adenine dinucleotide phosphate (NADPH) oxidase, enzymes that generate reactive oxygen species. They inhibit lipoxygenase and cyclooxygenase which are enzymes involved in the lipid peroxidation process.<sup>20</sup>

## CONCLUSION

Mint possesses antioxidant potential due to the presence of various antioxidants.

## AUTHOR'S CONTRIBUTION

SK: Drafted manuscript

HJQ: Supervision and critical review

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