Free radicals and related reactive species, especially reactive oxygen and nitrogen species (ROS/RNS), are able to cause damage to biomolecules, leading to cell and tissue injury in mammals, including humans. Thus, a number of endogenous antioxidant defenses have been evolved in mammals to protect against the damage caused by ROS/RNS; a variety of antioxidants has been applied to the treatment and prevention of disease. In addition, antioxidants have been widely used in food, medicine, and cosmetics industry. As a result, “antioxidants” became a buzzword in the 1990s, and their benefits were glorified by the media, by the food industry which began labeling foods as “rich in antioxidants,” and by the supplement industry as they began hyping the health benefits of antioxidant supplements. They were even promoted as antiaging ingredients in beauty products.

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One paper of this special issue introduces the antioxidant constituents and pharmacological effects of Sijunzi decoction by looking up literatures in recent years. Research on the antioxidant components of Sijunzi decoction and their targets is a promising study area in the future.

Another paper presents the study on stress-induced ROS changes DNA methylation patterns; this paper developed a protocol combining methylation-sensitive restriction endonuclease digestion with suppression subtractive hybridization to construct the differential-methylation subtractive library.

Another paper clarified the cardioprotective property of the aqueous extract of Elaeagnus angustifolia L. leaf (EA) against myocardial ischemia/reperfusion injury in isolated rat heart. Another paper evaluated the cardioprotective property of the aqueous extract of lavender flower (LFAE) on myocardial ischemia/reperfusion (I/R) injury of rat using Langendorff retrograde perfusion technology. The result of these two articles showed that EA and LFAE provide protection for heart against the I/R injury via the improvement of myocardial oxidative stress states.

One paper clarified that water extract of Chorispora bungeana treatment significantly reduced neurological deficit scores and infarct size through antioxidant and antiapoptotic activities. Another paper revealed that the antioxidant enzymes of halophyte used in traditional Chinese medicine for clearing heat and for detoxification are activated under NaCl stress. Another paper clarified the protection of ginsenoside Rg3 against oxidative stress in human neuroblastoma SK-N-SH cells. Both 20 (R)-Rg3 and 20 (S)-Rg3 had obvious protection against H₂O₂-induced oxidative stress in SK-N-SH cells.

Another paper uncovered that ophiurasaponin from Ophiopilosis mirabilis had obvious antioxidant activities and antimicrobial activities which could provide the theoretical basis for further research and development of antioxidant and antimicrobial marine drugs. Another paper made clear
that five compounds with antioxidant and anti-inflammatory activities were isolated for the first time from Styela clava.

Another paper systematically evaluated the antioxidant activity of Xanthohumol using three systems; results showed that different methods for evaluation of antioxidant capacity may have led to a different conclusion.

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