

**Title** Modified atmosphere packaging of fruits and vegetables  
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### **Abstract**

**Purpose of the review:** This article summarises the main findings of a recent literature review on the application of active and passive modified atmosphere packaging (MAP). The combined use of MAP and refrigeration during storage, handling, distribution and retail sale maintains postharvest quality and safety of a wide range of whole intact and minimally-processed fruits and vegetables.

**Findings:** There are very relevant results on keeping quality (sensory, microbial and nutritional) of commodities, some of which have been recently applied in the food industry. Beneficial effects of MAP are commonly pronounced in increased safety and a significant reduction of qualitative or quantitative losses during handling, storage, transport, distribution and retail sale.

**Limitations/implications:** Some negative effects of MAP are also reported including slower cooling rate of the packaged product and the potential risk of water condensation within packages due to temperature fluctuations. Abnormal ripening of certain fruits, as well as the development of physiological disorders can occur. Off-flavours and off-odours might develop due to the organic volatile emission under anaerobic conditions. A decrease in some bioactive compounds could also take place.

**Future research needs:** Improvements in the MAP technique should be further studied. For example, fast achievement of the optimal MAP and the development of dynamic packages including those for individual fruits (edible or not) should be optimised. The improvement of emerging techniques such as alternative gas mixtures, antimicrobial or superatmospheric oxygen seems to be promising. The development of appropriate modelling simulations to predict quality changes would be a significant advance.