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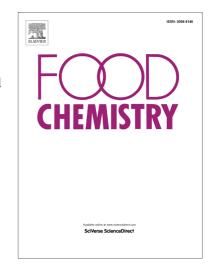
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CCEPTED MANUSCRIPT

Iron-catalysed chemistry in the gastrointestinal tract:

Mechanisms, kinetics and consequences.

A review

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**Abstract** 

Chemical changes that occur during the storage and processing of food can affect its

nutritional content. During digestion, the exposure of food to considerable variations of pH

and high oxygen and peroxide concentrations also participates in the deterioration of

nutrients, with a negative impact on the nutritional value of the diet and harmful consequences

for human health. Iron plays a key role in gastrointestinal chemistry. Haem iron, which exists

only in meat, and non-haem iron, present in most foods, are catalysts of most of the reactions

implicated in the deterioration of nutrients. Disintegration of food matrix due to mechanical

forces and enzymatic hydrolysis favour this endogenous process. This paper provides a

review of what is known in the literature concerning the mechanisms and kinetics of

endogenous reactions catalysed by iron. The main consequences on nutrient bioavailability

are reported and protective strategies against the deleterious effect of iron are discussed.

**Keywords:** Antioxidants; digestion; haem iron; iron; nitrosation; oxidation

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