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Letter to Editor

Oxidation of Ferric Porphyrins/the Green Spot

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Possible causative organisms and mode of operation in meat degradation or putrefaction.

What cause meat to decay or putrefy and how can meat be preserved?

Glucose is converted to lactic acid by bacteria. Nitrate is reduced to nitrite also by bacteria.

Nitrite is converted to nitrous oxide and nitric oxide is reduced to myoglobin.

Myoglobin has a pink-red pigment cured meat becomes green. This is oxidised porphyrin (green in colour).

Reduction is by strains of Micrococcus and occasionally Staphylococcus.

Characterization of haem oxidation falls naturally into two categories; species resulting from electron transfer and in vivo and in vitro haem degradation products formed by oxidative addition or cleavage.

In the former the intermediates appear during the catalytic cycles of catalase (Cat); horseradish peroxidase (HRP), and cytochrome c peroxidase; the latter class consists of the bile pigments formed by catabolism of haem proteins as well as chemical intermediates such as oxophlorin and verdohaem.

Salient features of the catalytic cycles of the enzymes have been discussed previously; briefly these are the appearance of the green species (compound I) when the enzyme is treated with H_2O_2 or an organic hydroperoxide.

The enzymatically active compound I is a two-electron oxidation product of the ferrihaem protein and upon reduction forms first a one-electron oxidation compound (Compound II) which may be reduced further to the parent ferrihaem.

Compound I of cytochrome c peroxidase differs from these general observations in as much as its optical spectrum is quite similar to Compounds II of HRP and Cat and it displays an ERP signal at g approximately 2.0.

Although no ERP signal has been observed for HRP I or HRP II, recent studies on the methyl hydroperoxide complex II of catalase show the existence of a complicated ERP spectrum.

Other physical properties of interest are magnetic susceptibility measurements on Cat I and HRP I, which show that these species have an effective magnetic moment consistent with three unpaired electrons.

The Mossbauer spectra of Compounds I and II of HRP and Cat have similar isomer shifts which, in turn, differ from those of the parent enzymes.

Causative organisms include; Proteus Mirabilis, Candida species, Bacillus Cereus, Pseudomonas, Klebsiella and Yersinia Pseudotuberculosis!

References

1. Toxic granulation.
2. Rothenberg M, Hogan S. The eosinophil. Annu Rev Immunol. 2006; 24: 147-174.
3. Pince-nez. Dictionary.com.unabridged (v1.1). Random House. Accessed. 2008.
4. KawamotoH, Minato N. Myeloid cells. Int J Biochem Cell Biol. 2004; 36: 1374-1379.
5. Acute Promyelocytic Leukaemia. APL M 3 variant; Golomb et al; British Journal of Haematology. 1982; 50: 201-214.

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