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Chairman's Opening Remarks

ROYAL SOCIETY OF CHEMISTRY, FOOD CHEMISTRY GROUP, SYMPOSIUM ON 'CHEMISTRY OF SULPHUR DIOXIDE IN FOOD AND RELATED SYSTEMS', 27 OCTOBER, 1983

Sulphur, its oxides and its oxyacids have been used in food technology for at least 2000 years—certainly it was used in the early Mediterranean civilisations as a sanitising agent, but its applications nowadays are much wider than that. As an anti-microbial agent, an inhibitor of enzymic browning, an inhibitor of non-enzymic (Maillard) browning, a decolorising agent, a modifier of protein dough (and solution) rheology, an inhibitor of nitrosamine formation in malt—it almost seems as though, wherever the food technologist has a problem, instinctively he turns to SO_2 and, quite often, it works, although the chemical basis for the effect may not be fully understood.

This versatility as a food additive derives from the wealth of chemical reactions in which it can participate—and this provides the key to the second fascinating feature of the chemistry of SO_2 in food-related systems, i.e. that, having exerted its desired effects, it very often then removes itself from the scene. Certainly, some of it ceases to be measurable as a direct consequence of the desired chemical effects it exerts, certainly some of it is lost as gaseous SO_2—but, more usually, it ceases to be measurable as a consequence of unidentified side-reactions leading to largely unidentified products.

Our Symposium addresses itself to the chemical bases of both the

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desired action of SO_2 and the reactions which lead to its removal. The first author addresses the chemistry underlying that piece of scientific detective work which led to the discovery of vitamin B_1 (thiamine)—a classic story but one in which, like most of the effects of SO_2, the detailed chemistry has been poorly understood. Dr Zoltewicz has been conducting some fascinating and long overdue investigations into the reactions of SO_2 with thiamine which have highlighted some very special aspects of SO_2 chemistry. Dr Goodall's work on the formation of inorganic sulphur oxyacids from SO_2 in non-aqueous systems begins to provide a chemical understanding of the factors which are at work during the conversion of SO_2 to the wide range of sulphur oxyacids which have been reported in foods, and points to the need to bear in mind the implications of the heterogeneous nature of many of our foods when attempting to predict the reactions which will occur. Professor Yang's talk develops this theme and draws attention to the reactions which are possible between SO_2 and unsaturated, biologically important, molecules. His work highlights two important points—first, the wide range of compounds which can react with SO_2 and, secondly, that the reactions do not necessarily lead to the inclusion of a sulphur atom in the reaction product; his work with tryptophan is particularly interesting in this respect.

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