

## L.10.- Determining the origin of meat

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The determination of the origin of meat can be separated into three categories: geographical origin, production origin and species origin.

True markers of for the determination of geographical origin in food must be influenced by the local environment in which it was grown. Trace elements and stable isotope ratios are the most commonly used markers as they have a direct relationship to geology and climate. Stable isotope ratios of hydrogen (2H/1H) and oxygen (18O/16O) in food are influenced by local ground water that was used in the food's production. Similarly stable isotope ratios of strontium (87Sr/86Sr) combined with trace elements can provide information relating to the local geology.

Production processes inevitable effect food composition and resulting markers can be exploited using analytical methods. Again stable isotopes 13C/12C, 15N/14N, 34S/32S combined with trace elements are being used to provide information on the diet regime and investigations into their use as markers of organic production are being undertaken. Chemical markers have been developed for use in identifying natural hormone abuse.

The identification of meat and meat products throughout the food chain relies of the genetic identification of the species and the ability to relate the species to a population group or breed. At the simplest level a piece of meat can be identified as a particular animal species on the basis of mitochondrial cytochrome B sequence. Oligo arrays have the capacity to identify multiple species, and have come to the market place as a commercial product. The ability to trace an animal back to an origin relies on micro satellite analysis, and an understanding of population genetics. For the species in question primers are developed that allow the specific separation of alleles. The characteristic pattern produced by a number of alleles can define a particular breed or sub population and hence the country of origin.

A review of methods for determining the origin of meat will be presented together with an outline of future strategies that are currently being proposed. Select the field and type or paste the text.

### Keywords

*Meat, geographical origin, stable isotopes, micro satellite*