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CON4EI: Consortium for *in vitro* eye irritation testing strategy

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Measurement of ocular irritancy is a necessary step in the safety evaluation of industrial and consumer products. Assessment of the acute eye irritation potential is therefore part of the international regulatory requirements for testing of chemicals. The objective of the CON4EI project is to identify strategic combinations of alternative test methods within a tiered-testing strategy in order to replace the *in vivo* Draize eye test. Therefore, a set of 80 reference chemicals covering the most important *in vivo* drivers of classification, balanced according to the physical form (38 liquids and 42 solids) and representing different chemical classes, was tested in eight *in vitro* test methods. The set was composed of 15 chemicals not requiring classification (No Cat) and 65 chemicals requiring classification (27 Cat 2 and 38 Cat 1). The performance with regard to the *in vivo* drivers of classification of the following methods was evaluated individually: BCOP and BCOP-LLBO, ICE, EpiOcular EIT, EpiOcular ET-50, HCE EIT, STE and SMI test method. In a second step, two by two agreement between test methods was evaluated to identify similarities between methods. Finally, different test methods were combined into a testing strategy and the performance was evaluated. These analyses provided evidence that different testing strategies are possible. For example, a combination of the BCOP and HCE EIT test method resulted in an accuracy of 81% with a Cat 1 sensitivity of 86.3%, Cat 2 sensitivity of 63% and 100% specificity. Furthermore, none of the Cat 1 chemicals were identified as No Cat. This was an improvement over the stand alone assays that cannot differentiate between the different categories. Similar results were obtained when the BCOP was combined with HCE EIT or EpiOcular EIT.

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Microalgae: A source of food color additives for a better health

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Since the industrial revolution, the consumption of processed food increased dramatically. During processing, food material loses many of its natural properties, including color. Because the influence of color on food acceptability, choice, and preference comes more from education than any inherent psychophysical characteristics, it is clear that if food color differs from the consumer's expectation, flavors identification is decreased. In other words, if color is unacceptable or unappealing, the other factors important for consumers' liking (i.e. flavor and texture) are unlikely to be judged at all. Therefore, color restoration, as well as fortification, through food supplementation is of primary importance. The observation that natural food additives are safer and better accepted by consumers than synthetic ones have strongly increased the demand for natural compounds. This increasing demand contributes to an accelerated depletion of traditional natural resources already threatened by intensive agriculture and pollution. To overcome these difficulties and satisfy the demand, alternative sources for natural carotenoids have to be found. In this context, microalgae present a very high potential because they contain their color covers the whole rainbow. The potential is indeed enhanced by the huge biodiversity of microalgal strains, the possibility to grow them in bioreactors and their high added value. Last but not least, many of these compounds present health promoting effects. In this communication, the different types of pigments produced by microalgae will be presented. Their chemical properties as well as their current usages together with their adverse and beneficial roles will be described.

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