**Behaviour of aroma (1-hexanal and phenol) sorption on the properties of chitosan-gelatin edible films according the RH level**

N. Benbettaieb1,2, C. O’Connel3, A.M. Seuvre1,2 and F. Debeaufort1,2\*

*1Univ. Bourgogne Franche-Comté/AgroSup Dijon, UMR PAM A02-102, Food and Wine Physical-Chemistry lab, 1 esplanade Erasme, Dijon 21000, France*

*2IUT-Dijon-Auxerre Dpt BioEngineering, 7 blvd Docteur Petitjean, Dijon Cedex 20178, France*

*3Cork Institute of Technology, Bioscience Dpt, Rossa Av., Bishopstown, Cork, Irlande*

*\*Corresponding author. E-mail:* [*nasreddine.benbettaieb@u-bourgogne.fr*](mailto:nasreddine.benbettaieb@u-bourgogne.fr)

Edible film applications usually aim to reduce mass transfers (moisture, solutes, salts, lipids aromas…) between food and surroundings or between compartments within a multiphasic food 1. However, edible films and coating could be envisaged to aromatize the food surface, or to retain flavours 2. Valorization of seafood industry by-products like chitosans from crustacean shells and gelatins from fish waste have demonstrate great potential as packaging biopolymer materials 3. Edible films made of chitosan and gelatin (in a ratio 1:1 of solutions) have been set up and tested as carriers/releasers for aroma compounds. Therefore, we studied the sorption kinetics of 1-hexanal and phenol at ~2% , 53% and 84% relative humidity.

Depending on the aroma chemical structure and properties, the amount of flavour sorbed by the film varies from 0.91 to 144.4, from 2.22 to 511 and from 5.6 to 519.8mg/g dry film respectively from 1-hexanal to phenol and respectively at ~2%, 53% and 84% RH. The increase in moisture enhanced the sorption 3 and 6 times for phenol and 1-hexanal. Whatever the relative humidity conditions, the sorption of phenol is from 90 to 230 times higher than that of 1-hexanal.This could be related to both hydrophobicity and volatility of the aroma compounds. Phenol has an ideal sorption behaviour (logarithmic increase) at the three relative humidity. On the contrary, a very fast and high amount of 1-hexanal was sorbed at the very beginning of the sorption process, and then, this seems to decrease with time. The effect of aroma on the films structure displayed different behaviours : phenol is an efficient plasticizer, better than water, as it reduced the Tg (glass transition temperature) by almost 55°C at ~2% RH , by 26°C at 53% RH and by 40°C at 84%RH; in contrast, 1-hexanal had an antiplasticizing effect by increasing the film Tg by about 5°C and 70°C respectively for ~2% RH and 53% RH, thought it was sorbed at a very low amount.

*References*

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