

## SPRAY CONGEALING FOR IMMOBILIZATION OF BIOCATALYSTS

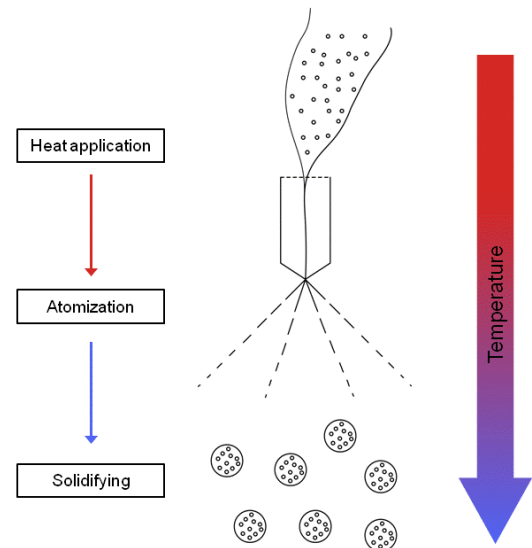
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Spray congealing was investigated as new innovative immobilization technique for biocatalysts. The immobilization is realized by an atomization of a suspension or emulsion of a melted carrier and the enzyme, which is re-solidified due to temperature decrease. This method needs neither organic solvents nor a difficult downstream processing after preparation. For the encapsulation different matrices, like long chain alcohols and glyceryl derivatives, with melting points below 86 °C and environmentally friendly properties were chosen and tested for their suitability for enzyme encapsulation. Spray congealing is widely used for pharmaceutically active ingredients, but has not been described for enzymes so far [1].

The immobilization of a laccase, (Novozym 51003, from *Myceliophthora thermophila*), was investigated and the produced microparticles were characterized. The obtained particles showed a mean particle size around 40 µm and a spherical surface with different structures depending on the used matrix. Spray congealing with the laccase reached yields of 80 % and residual activities up to 56%. Furthermore 4 consecutive reactions with 20% retained activity of in cetyl alcohol immobilized enzyme were realized.

Cetyl alcohol was found to be the most appropriate carrier for the immobilization of the investigated laccase, due to an easy handling and high yields. In addition, the best retained activities were obtained and a recycling of the biocatalyst could be realized [2].



### References

- [1] Di Sabatino, M.; Albertini, B.; Kett, V. L.; Passerini, N., *European Journal of Pharmaceutical Sciences* 2012, 46 (5), 346-356.
- [2] Engelmann, C.; Kragl, U., *Journal of Biotechnology*, submitted