

## **Polyphenols from waste streams of industrial marzipan production**

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The valorisation of waste streams from industrial marzipan production is to be realised by the recovery of bioactive components. Almond skins as well as blanch water contain a crude mixture of polyphenols and procyanidins with high structural variety [1]. New sources for polyphenols are in demand due to their antioxidant potential and their suggested ability to prevent chronic diseases [2]. Here we report the isolation and structural characterisation of polyphenols yielded from the waste streams. The selected extraction methods allow application in a recycling concept by providing the substances in a transportable and storable form. Polyphenols from the blanch water were enriched by a factor of 3.4 using Amberlite XAD-7HP adsorption [3]. After ultrafiltration of the eluate, preparative C18-HPLC separation yielded corresponding fractions of polyphenols. Total phenolic content was measured with Folin Ciocalteu assay, while oxygen radical capacity assay was used to determine the antioxidant activity of the fractions. Active fractions were characterized by HPLC-ESI-ion trap MS identifying known compounds. Also not yet described compounds like dimeric *B*-linked propelargonidin-hexoside as [M-H]<sup>-</sup> ion at *m/z* 723 were detected by LC-MS. These results should lead to a scale up of the described methods for polyphenol recovery in food industry.

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### **References**

- [1] Hughey CA et al. *Food Chemistry* 2012; 131:1165–1173.
- [2] Bolling BW. *Comprehensive Reviews in Food Science and Food Safety* 2017; 16:346–368.
- [3] Buran TJ et al. *Journal of Food Engineering* 2014; 128:167–173.