

**O025****Biorefinery approach to valorise vegetable waste from the wholesale market**Doriana E.A. Tedesco<sup>a</sup>, Sveva Scarioni<sup>a</sup>, Aldo Tava<sup>b</sup><sup>a</sup>*Dipartimento di Scienze e politiche ambientali – DESP,  
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The biorefinery can be a valid approach to enhance food waste, especially fruit and vegetable of which 40–50% is lost and wasted. This biomass is suitable for the development of other value-added products becoming an important raw material of valuable phytochemicals such as Dietary Fibre (DF) and other natural bioactive substances such as polyphenolic compounds. DF consists of soluble dietary fibre (SDF) and insoluble dietary fibre (IDF) and in monogastric animals, it has different chemical properties and functions within the gastrointestinal tract. DF can positively influence the composition of the intestinal microbiota by stimulating the proliferation of health-promoting bacterial species. Furthermore, the polyphenolic compounds have positive nutritional properties due to their antioxidant, anti-inflammatory, anti-viral, anti-microbial activities including their ability to modulate lipid metabolism.

This study is focused on the evaluation of the content of DF and total polyphenol of fruit and vegetable waste from the Wholesale Market of Milan, the largest in Italy, where fruits and vegetables are sold to retailers. The unsold products (i.e. those not redistributable by charities and those damaged, spoiled and bruised) become waste and are evaluated about 1700 tons/year. Representative samples composed of a mixture of fruit and vegetable waste collected across the year were considered in this study. Total, soluble, and insoluble dietary fibres were quantitated

by the enzymatic-gravimetric method (AOAC 991.43–1994, 2000), while the total polyphenols were determined with the Folin–Ciocalteu method and data expressed as gallic acid equivalents (GAE).

Across the year the DF was evaluated as  $26.4 \pm 6.6\%$  on DM basis of which the IDF was  $19.47 \pm 7.4\%$  on DM basis and SDF as  $6.93 \pm 2.3\%$  on DM basis, while total polyphenols were evaluated as  $2.23 \pm 0.7\%$  GAE on DM basis. Results indicated that fruit and vegetable waste represents a good source of DF and polyphenols.

These data show that fruit and vegetable waste can represent an excellent feed ingredient and can be considered an important resource for specific nutritional needs aimed at maintaining animal health and improve gut functions. This can stimulate new investigations focusing on feed production from this biomass.