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Biofuels production potential from industrial biocollagenic wastes of vegetable tanning using pyrolysis technologies fitting to circular economy and sustainability criteria.

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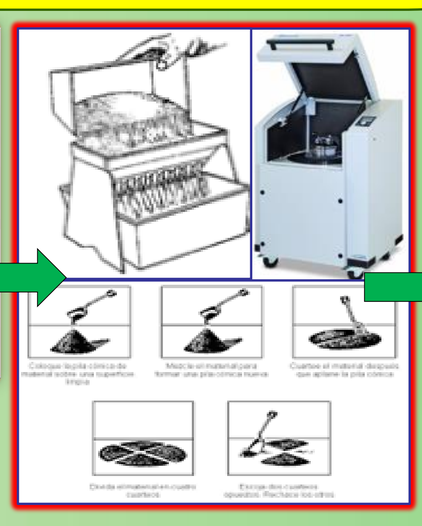
Recovery of biocollagenic wastes



Objective

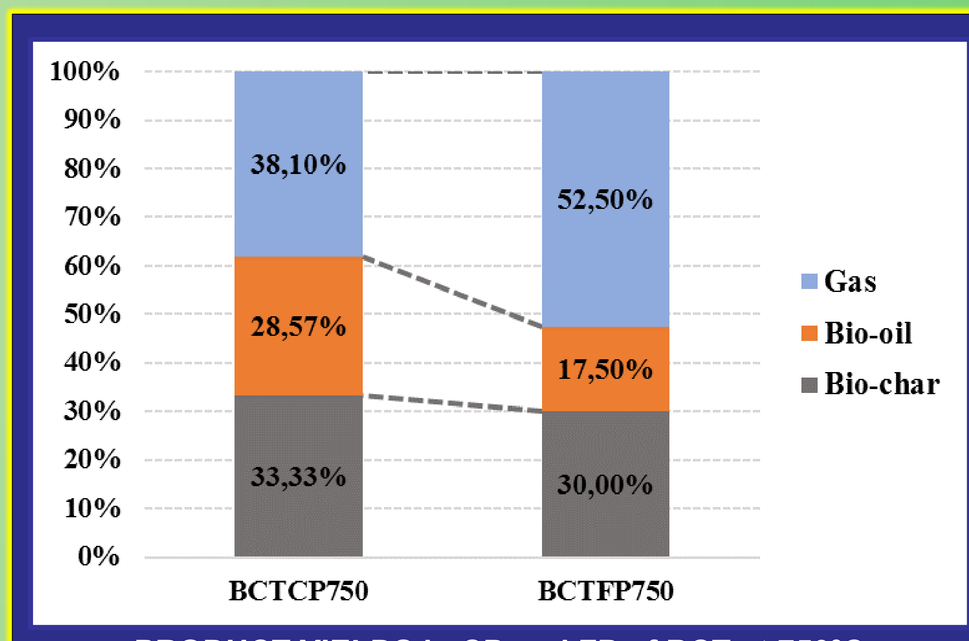
MAIN OBJECTIVE: Valorisation of biocollagenic wastes (BCT) from the tanning industry **using flash and conventional pyrolysis technologies (FP and CP).** Defatted and dehydrated leather (BCD) will also be studied in order to investigate the effect of tannins on tanned leather.

Final objective: To obtain biofuels, adsorbents and/or chemical precursors from industrial biocollagenic wastes in a circular economy scenario.

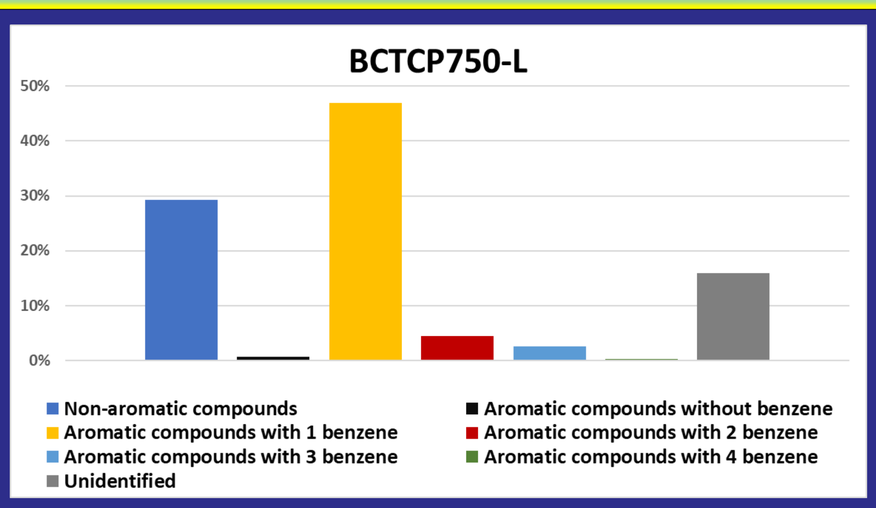
Results & Discussion

CONVENTIONAL PYROLYSIS (CP)
25 °C /min, 750 °C

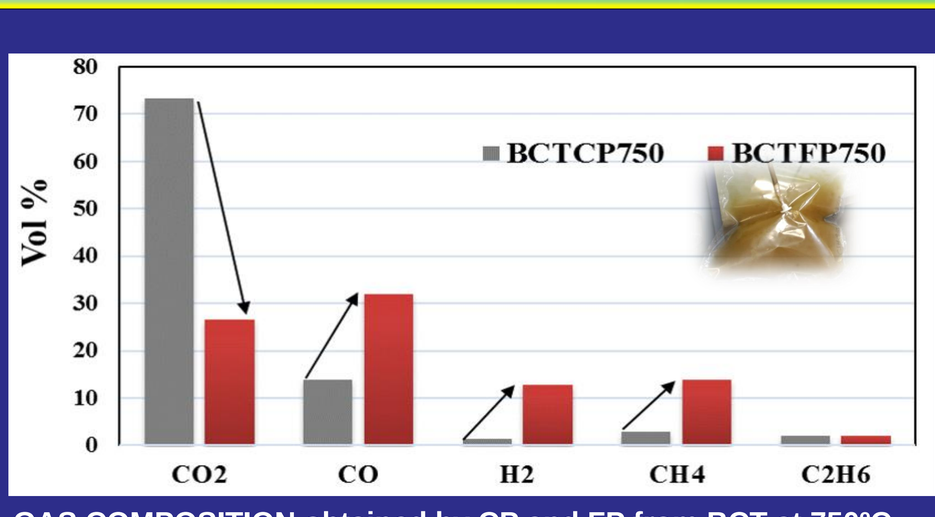
FLASH PYROLYSIS (FP)
750 °C – 850 °C



PRODUCT YIELDS in CP and FP of BCT at 750ºC



BIO-OIL COMPOSITION obtained by CP from BCT at 750ºC



GAS COMPOSITION obtained by CP and FP from BCT at 750ºC

Conclusions

1) Physical-chemical characterization of BCT and BCD showed that they are suitable materials for conventional and flash pyrolysis.
2) It is possible to obtain biofuels or biomaterials from BCT .
3) The properties of bio-chars make it suitable as a precursor for activated carbon, soil fertilizer or fuel.
4) Flash pyrolysis gases, with a higher CH_4 and H_2 content and higher calorific value, can be used as biofuels.
5) Bio-oils, due to their organic nature, can be used for the production of chemical products.
6) Pyrolysis technology is an alternative to incineration or landfilling of BCT waste to obtain high value-added products.

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