



ASSESSMENT OF PIGMENT BLUE-BERRY EXTRACTION AND PURIFICATION OF INTEREST IN FOOD INDUSTRY.

Aridahi García¹, Florencia Salinas¹, Eduardo San Martín², Lorena Chávez¹ y Genaro Cerón¹; ¹Universidad Tecnológica de Tecamac, División de Biotecnología, México, D.F. 55740. ²Cicata-Legaria. biotflorencia@yahoo.com.mx.

Key words: blue-berry, anthocyanins, extraction and purification.

Introduction. Anthocyanins are hydrosoluble compounds that have different therapeutic activities (Wong, *et. al.* 2010) due to their anti-oxidant capability (Pietta, 2007,) these biocompunds have different colors from blue to red so as to be important for pharmaceutical and food industry. Just recently in food industry natural colorants are use; then anthocyanins are widely use. In blueberries, twenty deriving anthocyanins have been isolated (Rui Li., *et. al.* 2011).

The objective of this study was to assess the optimal time conditions for extracting liquid-solid and purifying the blueberry anthocyanins.

Methods.

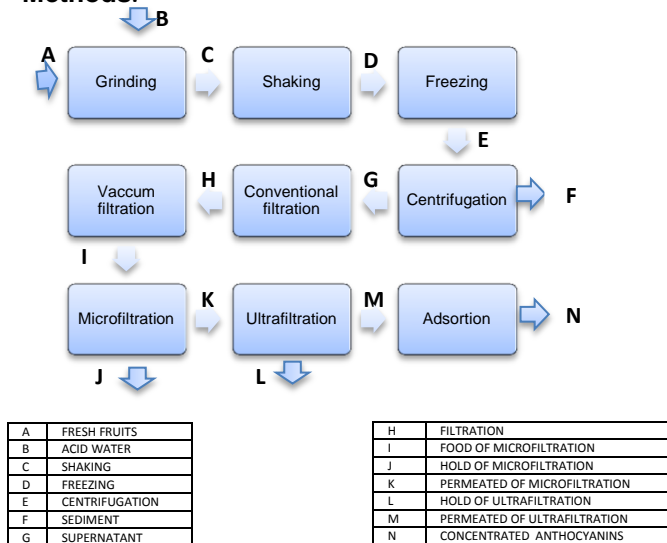


Figure 1. The diagram process

Results. According to the set methodology the data obtained in the first stage that corresponds to grinding punder of blueberries with liquid dissolvent during in a period of time from 1-13 minutes it was establish that the fraction of dry weigh for each time due not change considerably. This was confirmed by the spectrophotometric measure of anthocyanins with wave length of 700 nm and 520 nm with 4.5 and 1 pH respectively; the results are affected by the temperature generated during the grinding time. In the second stage using the size reduction of the particle by grinding and shaking, the FSS was determined by two techniques: for direct separation and freezing both favor that the polymers, forming colloids, get in contact with water and they get insoluble and unfreezing and centrifugation a larger portion of solids are extract, with this process the anthocyanins concentration is not affected; assessing

the FSS results obtained in the first stage in the 13th minute, which is 0.061, it is expected that the shaking results cannot be smaller, this indicates experimental error. In the microfiltration operation and particularly in the ultrafiltration (figure 2) it is shown the amount of permeated flux and the permeated accumulate volume in comparison to the one obtained in microfiltration process, it was just observed the first 2 zones, this was expected because of the less sample quantity "From 0 to 0.2 ml/minute": indeed, the quantity of solids are less.

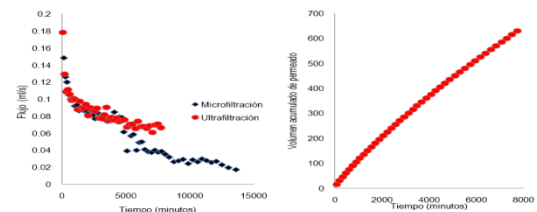


Figure 2. Flux and accumulated volume permeated during the ultrafiltration process of centrifuge extract of blue-berry

In the absorption operation a considerable solid remotion of 94.4% is got, which are not flavonoids (94.6%) in the dissolution operation of the absorbed solids in alcohol and drying the blueberry, 3694 mg, was obtained (Table 1).

Table 1. Published data on the extraction of flavonoids in cranberry, blackberry and raspberry

SOURCE	EXTRACTED FLAVONOIDS OF 1KG OF SAMPLE (mg)	FLAVONOIDS IN 1KG OF SAMPLE (mg)	BIBLIOGRAPHY AND SOURCE
BLUEBERRY	3694	5580	Hosseinian F.S. and Beta T. 2007
BLACKBERRY	2370	5890	Wada L and Ou B. 2002
RASPBERRY	1689	3650	Wu X. <i>et. al.</i> 2004

Conclusions. The appropriate grinding time is 15 second. It is concluded that the shaking time after a 15 second grinding should not be longer that 30 minutes. Carry out immediately the anthocyanins determination during the liquid- solid extraction because they get unstable.

References

- Won, Y. *et. al.* (2010). Characterization of a profile of the anthocyanins isolated from *Vitis coignetiae* Puliat and their anti-invasive activity on HT-29 human colon cancer cells. *Food and Chemical Toxicology*. 48:903-909.
- Wang, L. . and Stoner, G. (2008). Anthocyanins and their role in cancer prevention. *Cancer Letters*. 269:281-290.
- Pietta, P. (2007). Flavonoids as antioxidants. *Journal of Natural Products*. 63 (7):103-111.
- Rui, Li, *et. Al.* (2011). Anthocyanyn composition and content of the *Vacciniumlignosum*berry. *Food Chemistry*, 125:116-120.

