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Hystrix brachyura bezoar characterization, antioxidant activity screening, and anticancer activity on melanoma cells (A375): A preliminary study (Article) [\(Open Access\)](#)

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Abstract

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Porcupine bezoars (PBs) are masses of undigested calcareous concretions formed within the gastrointestinal tract. There are undocumented claims that PBs have antioxidant activity and can treat cancers. However, limited scientific study has been carried out to verify these traditional claims. Hence, this study was conducted to characterize the chemical profile and validate the antioxidant and anticancer activity against melanoma cells (A375). PB extract was initially subjected to Fourier-transform infrared spectroscopy (FTIR), gas chromatography–mass spectrometry (GCMS), total phenolic content (TPC), and total flavonoid content (TFC) analyses. The bioautography of antioxidant assays, namely 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid (ABTS), 2,2-diphenyl-1-picrylhydrazyl (DPPH), and β -carotene was performed. An in vitro A375 cell viability assay, apoptosis assay, cell cycle arrest assay, and gene expression assay were carried out as well. The experimental finding revealed 5,10-diethoxy-2,3,7,8-tetrahydro-1H,6H-dipyrrolo[1,2-a:1',2'-d]pyrazine, ursodeoxycholic acid, and cholest-5-en-3-ol (3 beta)-, carbonochloride are major compounds detected in PB extract. PB extract has low phenolic content, viz. 698.7 ± 0.93 ($\mu\text{g GAE/5 mg dry weight}$). The bioautography antioxidant assays revealed a potent antioxidant effect (ABTS > DPPH > β -carotene), with free radical scavenging activity. Furthermore, PB extract exhibited dose- and time-dependent inhibition of cancer activity on A375 cells due to the exhibition of apoptosis via an intrinsic pathway. © 2019 by the authors. Licensee MDPI, Basel, Switzerland.

Author keywords

[Antioxidant assay](#) [Apoptosis](#) [GCMS](#) [Porcupine bezoar](#) [Traditional medicine](#)ISSN: 20763921
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(2016) *Research Journal of
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activities of three porcupine
bezoars from Hystrix brachyuraYew, P. , Lee, W. , Lim, Y.
(2017) *Pharmacognosy Research*Peroxisome proliferator-activated
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Carkner, R.D.
(2009) *Breast Cancer Research*[View all related documents based
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- 1 Siegel, R.L., Miller, K.D., Jemal, A.
Cancer statistics, 2015 (Open Access)

(2015) *CA Cancer Journal for Clinicians*, 65 (1), pp. 5-29. Cited 8692 times.
[http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.3322/\(ISSN\)1542-4863](http://onlinelibrary.wiley.com.ezproxy.um.edu.my/journal/10.3322/(ISSN)1542-4863)
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- 2 Hajjar, D., Kremb, S., Sioud, S., Emwas, A.-H., Voolstra, C.R., Ravasi, T.
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(2017) *PLoS ONE*, 12 (6), art. no. 0177316. Cited 3 times.
<http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0177316&type=printable>
doi: 10.1371/journal.pone.0177316

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- 3 Chinembiri, T.N., Gerber, M., du Plessis, L., du Preez, J., du Plessis, J.
Topical Delivery of 5-Fluorouracil from Pheroid™ Formulations and the In Vitro
Efficacy Against Human Melanoma (Open Access)

(2015) *AAPS PharmSciTech*, 16 (6), pp. 1390-1399. Cited 3 times.
<http://www.springerlink.com.ezproxy.um.edu.my/content/1530-9932/>
doi: 10.1208/s12249-015-0328-7

[View at Publisher](#)

- 4 Duvoix, A., Blasius, R., Delhalle, S., Schnekenburger, M., Morceau, F., Henry, E., Dicato, M., (...), Diederich, M.
Chemopreventive and therapeutic effects of curcumin

(2005) *Cancer Letters*, 223 (2), pp. 181-190. Cited 583 times.
doi: 10.1016/j.canlet.2004.09.041

[View at Publisher](#)

- 5 Cragg, G.M., Newman, D.J.
Plants as a source of anti-cancer agents

(2005) *Journal of Ethnopharmacology*, 100 (1-2), pp. 72-79. Cited 969 times.
www.elsevier.com/locate/jethpharm
doi: 10.1016/j.jep.2005.05.011

[View at Publisher](#)

- 6 Pisoschi, A.M., Negulescu, G.P.
Methods for Total Antioxidant Activity Determination: A Review
(2012) *Biochem. Anal. Biochem.*, 1, pp. 1-10. Cited 96 times.

- 7 Khurana, R.K., Jain, A., Jain, A., Sharma, T., Singh, B., Kesharwani, P.
Administration of antioxidants in cancer: debate of the decade

(2018) *Drug Discovery Today*, 23 (4), pp. 763-770. Cited 4 times.
www.elsevier.com/locate/drugdiscov
doi: 10.1016/j.drudis.2018.01.021

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