

## 2.Comparison of Isolation Methods of Exosomes and Exosomal RNA from Cell Culture Medium and Serum

期刊年卷: *Int. J. Mol. Med.* 2017, 40(3)

DOI: 10.3892/ijmm.2017.3080

**IF2018 = 2.928**

**IF2017 = 2.784**

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### 文章简介

外泌体是细胞衍生的囊泡, 在生物体液中含量丰富, 且含有不同的 RNA 分子, 可作为“精准医学”中潜在的诊断生物标志物。王前教授和郑磊教授课题组 2017 年发表在《International Journal of Molecular Medicine》的文章**比较了不同外泌体提取方法和不同试剂盒提取外泌体小 RNA 的优缺点**。该研究发现超速离心提取方法具有最低的回收率, 但是分离的外泌体具有最高的蛋白质纯度。另外, 该研究发现 TEI 和 TER 方法的组合使用可提高提取效率和以及小 RNA 的纯度, 而使用 exoRNeasy 方法从血清中分离的 exoRNA 具有高产量以及窄尺寸分布等特点。**该研究指出, 不同的提取方法可能会引起外泌体与 exoRNA 的浓度、纯度以及大小的变化。该研究探索的每种提取方法的优缺点及其在不同标本中的应用可为外泌体研究设计提供极具价值的参考。**

Route	Isolation efficiency				Advantage and disadvantage	Recommended use
	Exosomes		exoRNA			
	Con	Purity	Con	Purity		
CCM						
_1, _2	L	H	L	M	High purity, low extraction efficiency	Large volume samples, proteomic research
_3	H	L	H	L	High extraction efficiency; protein contamination; exoRNA contain long RNA	Total exoRNA analysis
_4	H	L	M	H	High extraction efficiency; protein contamination; high purity of small RNA	High sequencing or other analysis of small RNA
_5	H	L	H	H	High extraction efficiency; protein contamination; high purity of small RNA	High sequencing or other analysis of small RNA
Serum						
_a	L	M	L	L	Low extraction efficiency; no RNA band found in Agilent bioanalyzer analysis	Exosome isolation of large volume samples, exosome-depleted FBS preparation
_b, _d	H	L	M	M	Protein contamination	Alternative offer for exoRNA analysis
_c	H	L	H	M	High level of miRNA	Recommended methods for miRNA qPCR analysis
_e	-	-	H	H	High level and purity of small RNA, no need for exosome isolation process, handle up to 4 ml serum	Small RNA sequencing, miRNA qPCR analysis, recommended method easily used in clinical laboratory
_f	H	M	H	L	No RNA band found in Agilent bioanalyzer analysis	Exosome isolation of small volume samples

CCM, cell culture medium; H, high; M, medium; L, low; Con, concentration. Bold highlights the recommended methods for exosomal small RNA research.

**Table.** Conclusion for the characteristics of each isolation method.