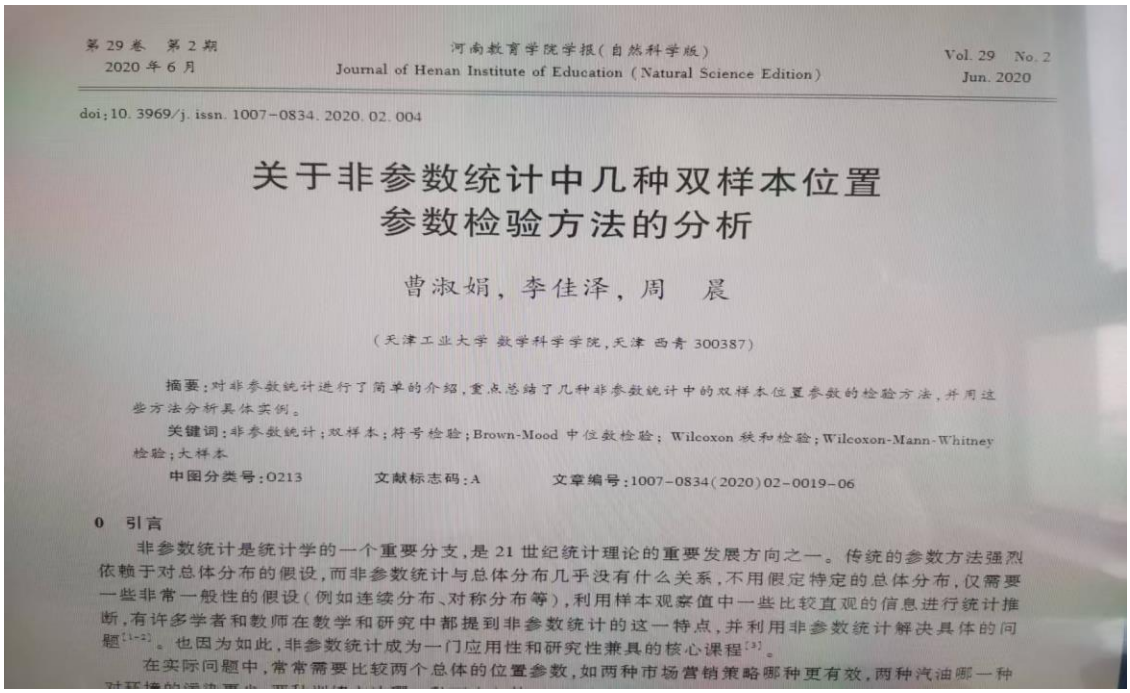
3 教师发表教改论文、教材、科研论文与项目情况

序号	成果名称	期刊（出版社、项目来源）	完成时间	完成人
1	关于非参数统计中几种双样本位置参数检验方法的分析	河南教育学院学报	2020.2	曹淑娟、李佳泽、周晨
2	从科学研究的视角重构数学建模教学	数学建模及其应用	2018.12	汪晓银、吴雄华
3	《应用统计学》	天津大学出版社	2020.4	杨雪、汪晓银
4	An enhanced memetic algorithm for energy-efficient and low-carbon flexible job shop scheduling problem considering machine restart	Journal of Manufacturing Systems	2025	赵静
5	The Strategic Analysis of Demand Forecast-Sharing in a Hybrid-Format Online Platform Supply Chain	Journal of Systems Science & Systems Engineering	2024	赵静
6	Interactions of competing manufacturers' leader-follower relationship and sales format on online platforms	European Journal of Operational Research	2020	赵静
7	混合平台供应链的需求信息分享与协同机制设计研究	国家自然科学基金委	2025.12	赵静
8	图熵若干问题的研究	国家自然科学基金委	2021.12	曹淑娟
9	基于阿尔茨海默症网络探索治疗AD的有效药物	天津市教委	2022.10	曹淑娟
10	Traditional Chinese Medicine studies for Alzheimer ‘s disease via network pharmacology based on entropy and random walk	PloS One	2023	曹淑娟
11	Gene Network Analysis of Alzheimer’ s Disease Based on Network and Statistical Methods	National Library of Medicine	2023	曹淑娟

12	Quality-adjusted time without symptoms or toxicity analysis of haploidentical-related donor vs. identical sibling donor hematopoietic stem cell transplantation in acute myeloid leukemia	Chinese Journal of Cancer Research	2024	高仙立
13	随机市场环境下缴费确定型养老金投资决策模型与应用	国家社会科学基金	2024.12	常浩

（支撑材料如下）

(1) 关于非参数统计中几种双样本位置参数检验方法的分析



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2020 年 6 月

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关于非参数统计中几种双样本位置参数检验方法的分析

曹淑娟，李佳泽，周 晨

（天津工业大学 数学科学学院，天津 西青 300387）

摘要：对非参数统计进行了简单的介绍，重点总结了几种非参数统计中的双样本位置参数的检验方法，并用这些方法分析具体实例。

关键词：非参数统计；双样本；符号检验；Brown-Mood 中位数检验；Wilcoxon 秩和检验；Wilcoxon-Mann-Whitney 检验；大样本

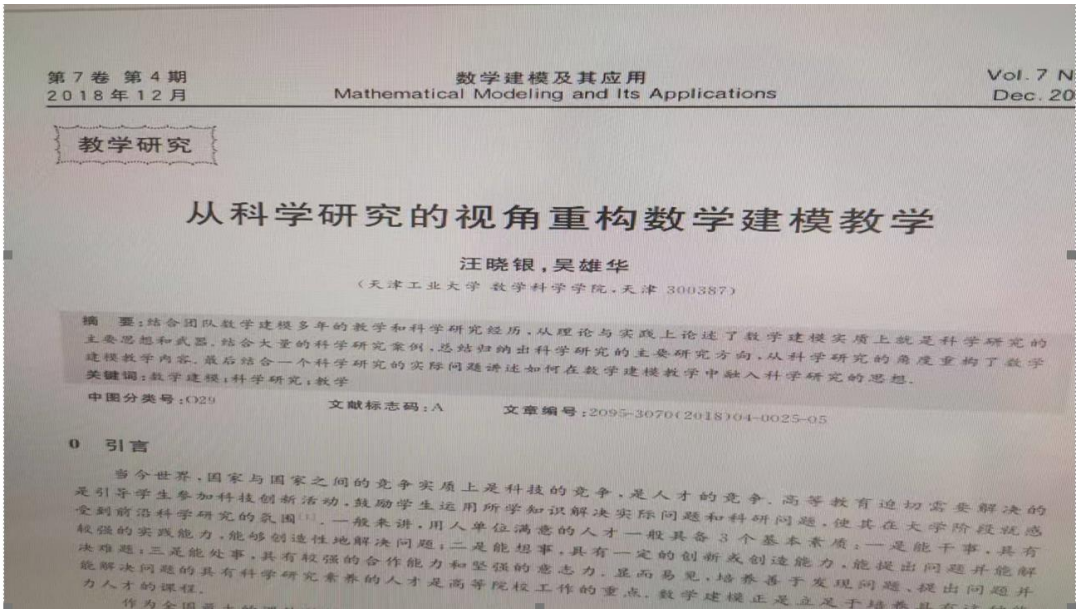
中图分类号：O213 文献标志码：A 文章编号：1007-0834(2020)02-0019-06

0 引言

非参数统计是统计学的一个重要分支，是 21 世纪统计理论的重要发展方向之一。传统的参数方法强烈依赖于对总体分布的假设，而非参数统计与总体分布几乎没有什么关系，不用假定特定的总体分布，仅需要一些非常一般性的假设（例如连续分布、对称分布等），利用样本观察值中一些比较直观的信息进行统计推断，有许多学者和教师在教学和研究中都提到非参数统计的这一特点，并利用非参数统计解决具体的问题[1-2]。也因为如此，非参数统计成为一门应用性和研究性兼具的核心课程[3]。

在实际问题中，常常需要比较两个总体的位置参数，如两种市场营销策略哪种更有效，两种汽油哪一种

(2) 从科学研究的视角重构数学建模教学



第7卷 第4期
2018年12月

数学建模及其应用
Mathematical Modeling and Its Applications

Vol. 7 N
Dec. 20

教学研究

从科学研究的视角重构数学建模教学

汪晓银，吴雄华
（天津工业大学 数学科学学院，天津 300387）

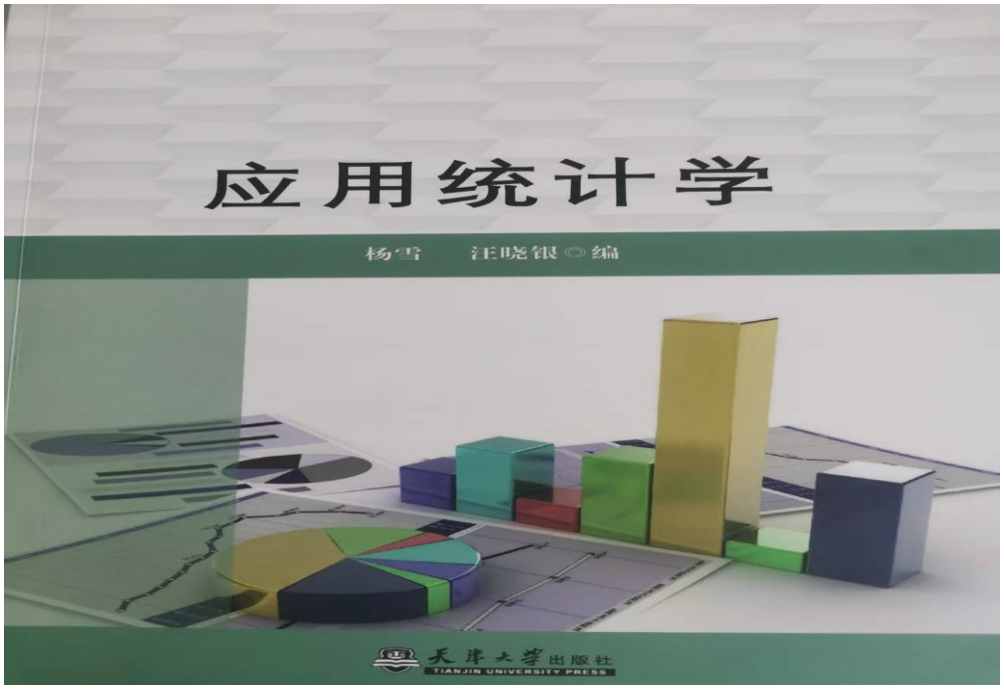
摘 要：结合团队数学建模多年的教学和科学研究经历，从理论与实践上论述了数学建模实质上就是科学研究的主要思想和武器，结合大量的科学研究案例，总结归纳出科学研究的主要研究方向，从科学研究的角度重构了数学建模教学内容，最后结合一个科学研究的实际问题讲述如何在数学建模教学中融入科学研究的思想．

关键词：数学建模；科学研究；教学
中图分类号：O29　　文献标志码：A　　文章编号：2095-3070(2018)04-0025-05

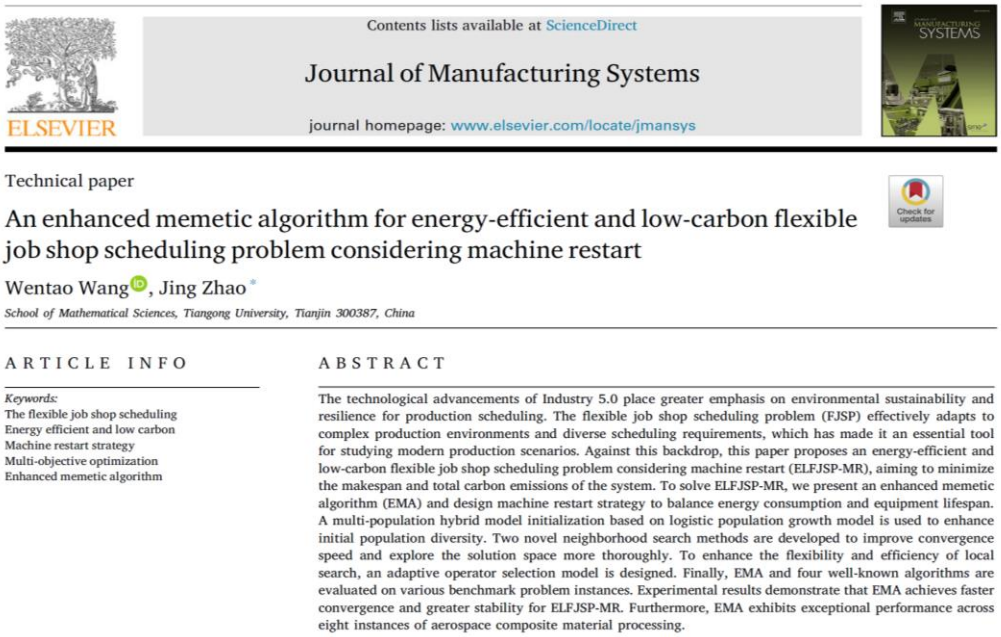
0 引言

当今世界，国家与国家之间的竞争实质上是科技的竞争，是人才的竞争．高等教育迫切需要解决的是引导学生参加科技创新活动，鼓励学生运用所学知识解决实际问题和科研问题，使其在大学阶段就感受到前沿科学研究的氛围[1]．一般来讲，用人单位满意的人才一般具备3个基本素质：一是能干事，具有较强的实践能力，能够创造性地解决问题；二是能想事，具有一定的创新或创造能力，能提出问题并能解决难题；三是能处事，具有较强的合作能力和坚强的意志力．显而易见，培养善于发现问题、提出问题并能解决问题的具有科学研究素养的人才是高等院校工作的重点，数学建模正是立足于培养具有[illegible]力人才的课程．

(3) 教材《应用统计学》



(4) An enhanced memetic algorithm for energy-efficient and low-carbon flexible job shop scheduling problem considering machine restart



Contents lists available at ScienceDirect

Journal of Manufacturing Systems

journal homepage: www.elsevier.com/locate/jmansys

Technical paper

An enhanced memetic algorithm for energy-efficient and low-carbon flexible job shop scheduling problem considering machine restart

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School of Mathematical Sciences, Tiangong University, Tianjin 300387, China

ARTICLE INFO

Keywords:
The flexible job shop scheduling
Energy efficient and low carbon
Machine restart strategy
Multi-objective optimization
Enhanced memetic algorithm

ABSTRACT

The technological advancements of Industry 5.0 place greater emphasis on environmental sustainability and resilience for production scheduling. The flexible job shop scheduling problem (FJSP) effectively adapts to complex production environments and diverse scheduling requirements, which has made it an essential tool for studying modern production scenarios. Against this backdrop, this paper proposes an energy-efficient and low-carbon flexible job shop scheduling problem considering machine restart (ELFJSP-MR), aiming to minimize the makespan and total carbon emissions of the system. To solve ELFJSP-MR, we present an enhanced memetic algorithm (EMA) and design machine restart strategy to balance energy consumption and equipment lifespan. A multi-population hybrid model initialization based on logistic population growth model is used to enhance initial population diversity. Two novel neighborhood search methods are developed to improve convergence speed and explore the solution space more thoroughly. To enhance the flexibility and efficiency of local search, an adaptive operator selection model is designed. Finally, EMA and four well-known algorithms are evaluated on various benchmark problem instances. Experimental results demonstrate that EMA achieves faster convergence and greater stability for ELFJSP-MR. Furthermore, EMA exhibits exceptional performance across eight instances of aerospace composite material processing.

(5) The Strategic Analysis of Demand Forecast-Sharing in a Hybrid-Format Online Platform Supply Chain

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CN 11-2983/N

The Strategic Analysis of Demand Forecast-Sharing in a Hybrid-Format Online Platform Supply Chain

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Abstract. This paper examines the optimal forecast-sharing strategy in a hybrid-format online platform supply chain where a supplier sells a product through agency format and reselling format provided by a platform retailer who possesses demand forecasts from two channels. Forecast asymmetry and co-opetitive relationship arise between the platform retailer and the supplier, which affect their operational decisions and the supply chain's performance. To improve supply chain efficiency, we compare different forecast-sharing strategies (i.e., no forecast sharing, sharing a single forecast, and sharing two forecasts), and analyze the effects of co-opetitive parameters on the optimal forecast-sharing strategy. Our analysis shows that forecast sharing is always beneficial to the supplier, and sharing two forecasts is more beneficial than sharing a single forecast. Whereas for the platform retailer and the whole supply chain, forecast sharing is beneficial only

(6) Interactions of competing manufacturers' leader-follower relationship and sales format on online platforms

European Journal of Operational Research 280 (2020) 508–522

Contents lists available at ScienceDirect

European Journal of Operational Research

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Production, Manufacturing, Transportation and Logistics

Interactions of competing manufacturers' leader-follower relationship and sales format on online platforms

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Keywords:
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Stackelberg game
online platform
sales format

ABSTRACT

Currently, manufacturers can sell products on e-tailers' online platforms through agency sales format or reselling format. However, how to choose the best sales formats has puzzled competing manufacturers in practice. The main purpose of this paper is to answer this problem by considering the combined effects of manufacturers' leader-follower relationships, the e-tailer's referral fees, the difference in products' substitutable degrees and the difference in products' market bases. Our results show that, if demand functions are linearly price-dependent, when two manufacturers sell substitutable products on the same e-tailer's online platform, the e-tailer's best action is always to let both manufacturers adopt reselling format; regardless of one manufacturer's sales format, the other manufacturer always prefers agency sales format, which are independent of the e-tailer's referral fees, the difference in two products' substitutable degrees and the difference in two products' market bases. Whether demand functions are linear or nonlinear in retail prices, the e-tailer's best action is to let both manufacturers whose products are symmetric adopt

(7) 混合平台供应链的需求信息分享与协同机制设计研究

项目批准号	72171169
申请代码	G0109
归口管理部门	
依托单位代码	30016008A1679-1769

国家自然科学基金
资助项目计划书
（预算制项目）

资助类别：面上项目
亚类说明：
附注说明：
项目名称：混合平台供应链的需求信息分享与协同机制设计研究
直接费用：48万元　　执行年限：2022.01-2025.12
负 责 人：赵静
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依托单位：天津工业大学
联 系 人：刘鹏飞　　电　　话：022-83955444
填表日期：2021年10月17日

(8) 图熵若干问题的研究

项目批准号	11801412
申请代码	A011602
归口管理部门	
依托单位代码	30016008A1679-1769

国家自然科学基金委员会
资助项目计划书

资助类别：青年科学基金项目
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附注说明：
项目名称：图熵若干问题的研究
直接费用：26万元　　执行年限：2019.01-2021.12
负 责 人：曹淑娟
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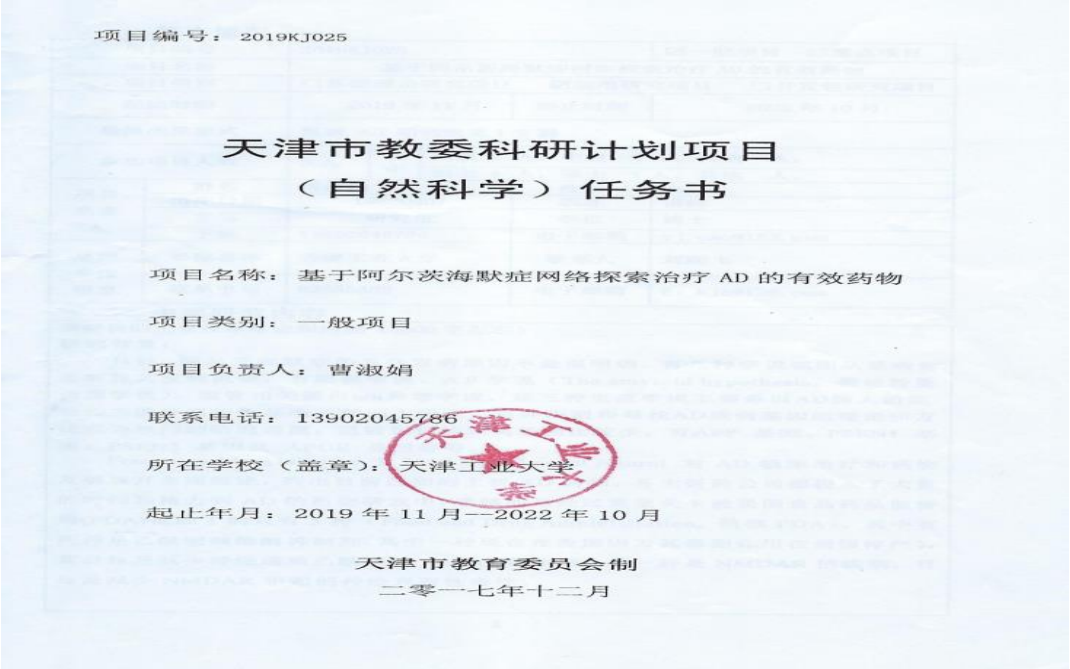
联 系 人：李晓捷　　电　　话：022-83955444
填表日期：2018年08月23日

国家自然科学基金委员会制

Version：1.009.227

(9) 基于阿尔茨海默症网络探索治疗 AD 的有效药物



项目编号： 2019KJ025

天津市教委科研计划项目
（自然科学）任务书

项目名称： 基于阿尔茨海默症网络探索治疗 AD 的有效药物

项目类别： 一般项目

项目负责人： 曹淑娟

联系电话： 13902045786

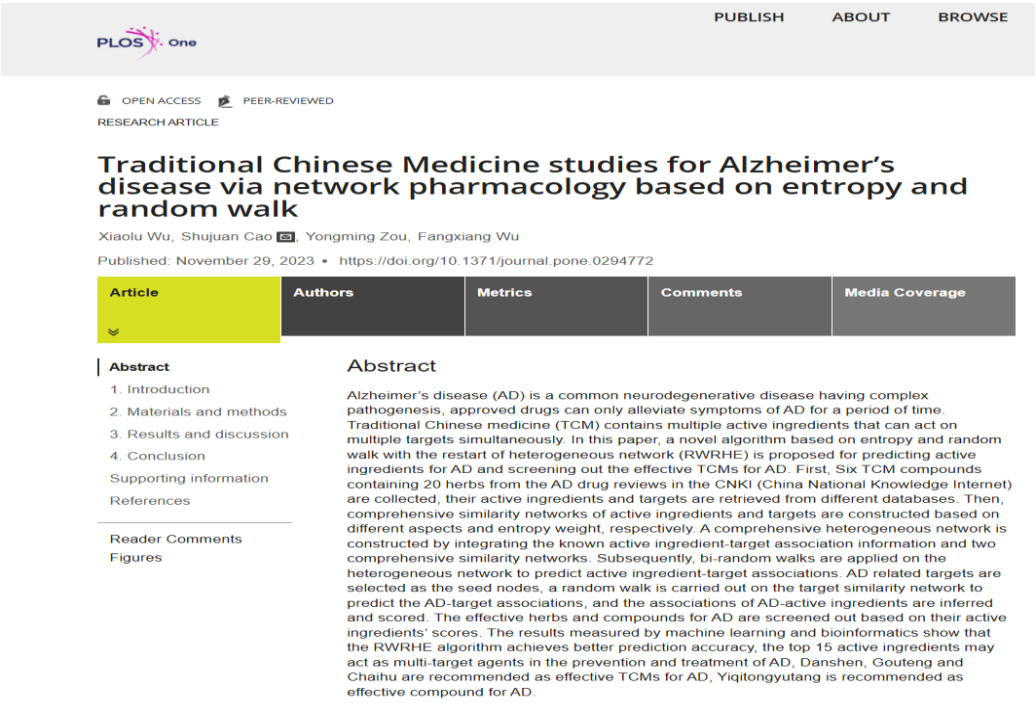
所在学校（盖章）：天津工业大学

起止年月： 2019 年 11 月—2022 年 10 月

天津市教育委员会制

二零一七年十二月

(10) Traditional Chinese Medicine studies for Alzheimer ‘s disease via network pharmacology based on entropy and random walk



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RESEARCH ARTICLE

Traditional Chinese Medicine studies for Alzheimer's disease via network pharmacology based on entropy and random walk

Xiaolu Wu, Shujuan Cao, Yongming Zou, Fangxiang Wu

Published: November 29, 2023 • https://doi.org/10.1371/journal.pone.0294772

Article | Authors | Metrics | Comments | Media Coverage

Abstract
1. Introduction
2. Materials and methods
3. Results and discussion
4. Conclusion
Supporting information
References

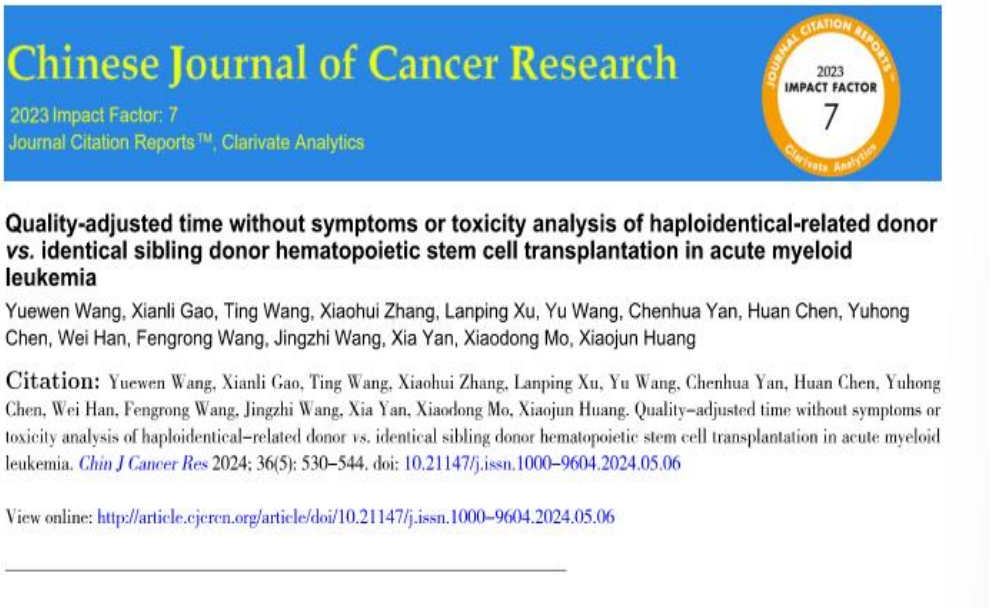
Reader Comments
Figures

Abstract

Alzheimer's disease (AD) is a common neurodegenerative disease having complex pathogenesis, approved drugs can only alleviate symptoms of AD for a period of time. Traditional Chinese medicine (TCM) contains multiple active ingredients that can act on multiple targets simultaneously. In this paper, a novel algorithm based on entropy and random walk with the restart of heterogeneous network (RWRHE) is proposed for predicting active ingredients for AD and screening out the effective TCMs for AD. First, Six TCM compounds containing 20 herbs from the AD drug reviews in the CNKI (China National Knowledge Internet) are collected, their active ingredients and targets are retrieved from different databases. Then, comprehensive similarity networks of active ingredients and targets are constructed based on different aspects and entropy weight, respectively. A comprehensive heterogeneous network is constructed by integrating the known active ingredient-target association information and two comprehensive similarity networks. Subsequently, bi-random walks are applied on the heterogeneous network to predict active ingredient-target associations. AD related targets are selected as the seed nodes, a random walk is carried out on the target similarity network to predict the AD-target associations, and the associations of AD-active ingredients are inferred and scored. The effective herbs and compounds for AD are screened out based on their active ingredients' scores. The results measured by machine learning and bioinformatics show that the RWRHE algorithm achieves better prediction accuracy, the top 15 active ingredients may act as multi-target agents in the prevention and treatment of AD, Danshen, Gouteng and Chaihu are recommended as effective TCMs for AD, Yiqitongyutang is recommended as effective compound for AD.

(11) Gene Network Analysis of Alzheimer’s Disease Based on Network and Statistical Methods

(12) Quality-adjusted time without symptoms or toxicity analysis of haploidentical-related donor vs. identical sibling donor hematopoietic stem cell transplantation in acute myeloid leukemia



(13) 随机市场环境下缴费确定型养老金投资决策模型与应用

全国哲学社会科学工作办公室

2021 年国家社科基金后期资助
暨优秀博士论文项目立项通知书

常浩　　同志：

经全国哲学社会科学工作领导小组批准，您申请的国家社会科学基金后期资助暨优秀博士论文项目 随机市场环境下缴费确定型养老金投资决策模型与应用 获准立项，项目类别为 一般项目，批准号 21FJYB042，资助总额 25 万元，第一次拨款 23 万元，预留经费 2 万元。

本年度国家社会科学基金后期资助和优秀博士论文项目立项时间为 2021 年 10 月 27 日，立项后《国家社科基金后期资助项目申请书》《国家社科基金优秀博士论文出版项目申请书》即成为有约束力的协议，您及责任单位要按照《国家社会科学基金管理办法》承担相应责任并执行以下规定：

1. 国家社会科学基金后期资助和优秀博士论文项目研究工作，要以习近平新时代中国特色社会主义思想为指导，坚持正确的政治方向、价值取向、研究导向，牢固树立问题意识、创

— 1 —