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 **Riddet Institute**
Kōkiri - Te Hā o Te Kai



Patent Insights Metabolic Health

Report dated 1 June 2021
Author: Peter Brown, IPSynergy

CONTENTS

1.INTRODUCTION	4
1.1.Executive Summary	5
1.2.Purpose and Outputs of this Report.....	6
1.3.Subject Matter Focus	6
2.PATENT TRENDS IN METABOLIC HEALTH	7
2.1.Overall Patent Application Trend in Metabolic Health (past 20 years)	8
2.2.Ranking of Applicants in Metabolic Health Patent Landscape (past 20 years)	9
2.3.Patent Values of Metabolic Health Patents (past 20 years)	10
2.4.Countries Generating the Most Innovation (past 20 years)	11
2.5.Top Applicants And Regions (past 12 months)	12
2.6.Chinese Patent Applications by Province (past 12 months).....	13
2.7.Patent Word Cloud - Chinese Patents (past 12 months)	14
2.8.Health Focus within Metabolic Health (past 12 months)	15
2.9.Functional Actives Linked to Metabolic Health (past 12 months)	16
2.10.Metabolic Health Outcomes vs Functional Actives (past 12 months)	17
2.11.Food Links in the Metabolic Health Patent Landscape (past 12 months)	18
3.BULL'S EYE PATENTS	19
4.HALO PATENTS.....	46
5.BACKGROUND PATENTS	47

6.THE EXTRA STUFF.....	67
6.1.Searching and Refinement Process.....	67
6.2.Author of this Report	67

1.INTRODUCTION



1.1. Executive Summary

We identified 228 newly published patents since our last report of June 2020. Of these, 131 were classified as either Bulls Eye or Halo.

In this report, any analytics focusing on trends in the last 12 months only looked at these Bulls Eye and Halo patents.

Whilst we see many NZ foods represented across the landscape of this review period, we note an increase in innovation around the use of legumes, as well as mixed herbs and spices. However, patents relating to kumara appear much less apparent this year.

This year's patent filings show a large number of inventions employing miscellaneous plant actives, with relatively lower numbers referring to probiotics, fibre and proteins, when compared with last year's report.

The upward trend of patent filings in this space continues to be observed, with big players such as Nestle, Sanofi and Nutricia continuing to dominate the landscape.



Over the past 12 months we continue to see patent filings from China and South Korea dominating the recent landscape, with filings from universities and research institutes a noticeable theme.

Within China, Jiangsu and Guangdong provinces continue to contribute the most innovation, with other provinces such as Shandong and Hebei no longer as prominent as they were in last year's report.

Once again, the majority of new innovations this year relate to type II diabetes and glycaemic control, with Chinese patents dominating the latter. We see multiple functional actives mentioned across these patents. Filings relating to obesity and dyslipidaemia are still seen, but not to the same extent as last year.

1.2.Purpose and Outputs of this Report

Provided by [HVN's Science of Food Platform](#), the purpose of this report is to provide HVN members with an update outlining patent insights and trends in food based approaches to metabolic health since the June 2020 report. The outputs of this report are:

- an executive summary;
- patent trends and insights over the past year, and in comparison to the landscape over the past 20 years; and
- trends and insights from the Bulls Eye and Halo patents published over the past 12 months; and
- details and access (through web-links) to each new patent in this review period.

This report should not be taken as specific advice relating to your intellectual property strategy, freedom to operate, commercial or legal matters. You should always seek your own independent advice relating to your situation. IPSynergy is happy to help.

1.3.Subject Matter Focus

Relevant patents included in this report are patents published after 2 June 2020, providing metabolic health outcomes through food/beverage interventions. We excluded patents if they were focused on pharmaceutical drugs, therapeutic treatments of disease states (opposed to preventative approaches of interest), synthetic compounds / molecules, recombinant technology or genetically engineered material, non-human animal treatments, non-oral routes of intervention, and diagnostics.

Bull's Eye patents relate to glycaemic control, prevention of pre-diabetes or diabetes using foods, nutrients or bioactives that have links to New Zealand's food industry.

Halo patents are related more-so to other metabolic health conditions including fatty liver, thin-on-outside, fat-on-inside (TOFI), thermogenic foods and whole diet approaches to metabolic health.

Background patents are those that a) may reference diabetes as a potential health outcome, but are not directed towards it, b) utilise probiotics as a bioactive, or c) hypertension, hyperlipidaemia, stroke, “triple high”, obesity and body composition. These were not included in the 12-month analytics. A full list of the Background patents is presented in section 5.

NB: We have also separated out patents that rely on traditional herbal medicine approaches to metabolic health because of the large number of results. We comment briefly on these in [Section 2.8](#), and are happy to review with anyone interested.

2. PATENT TRENDS IN METABOLIC HEALTH

Quick tip: We can interrogate the data generated for this report to answer any specific questions for HVN members beyond the insights shown here. Please get in touch with Peter at IPSynergy (peter.brown@ipsynergy.co.nz) to discuss any burning questions.



IPSynergy has generated the analytics in this report using its access to:

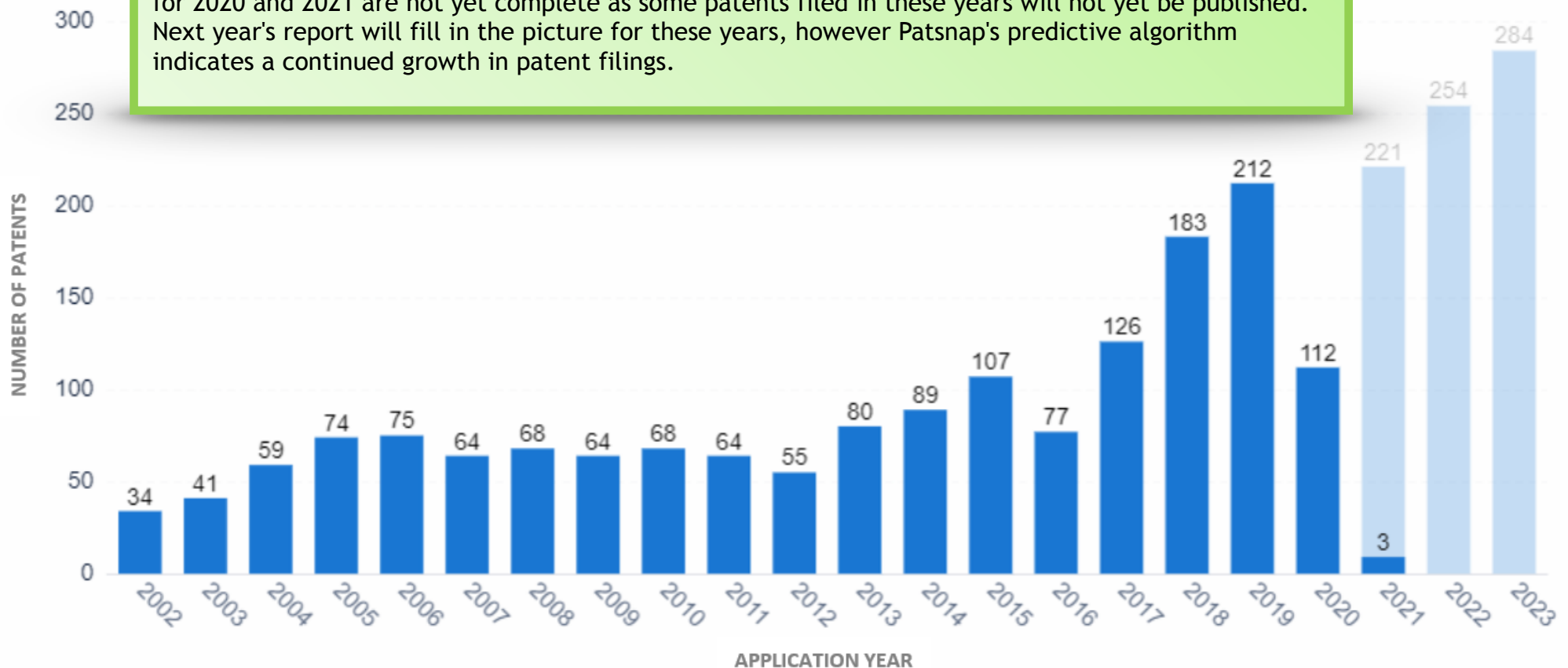
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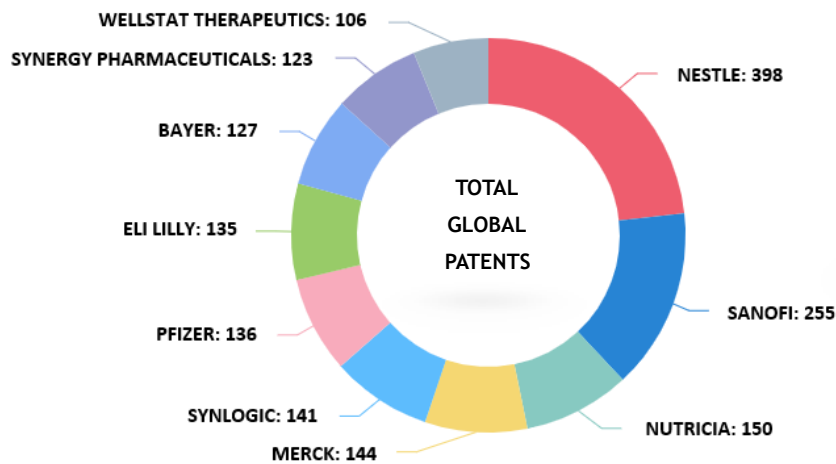
2.1.Overall Patent Application Trend in Metabolic Health (past 20 years)

In this update, we identify 228 relevant new patent applications that relate to metabolic health through food or food components. When we expand this out (not shown here), this totals 1,772 unique patent disclosures over the past 20 years, and 12,600 corresponding patent records globally (although not all will be in force!).

The growth observed in the previous report for recent years continues to be observed. The numbers for 2020 and 2021 are not yet complete as some patents filed in these years will not yet be published. Next year's report will fill in the picture for these years, however Patsnap's predictive algorithm indicates a continued growth in patent filings.

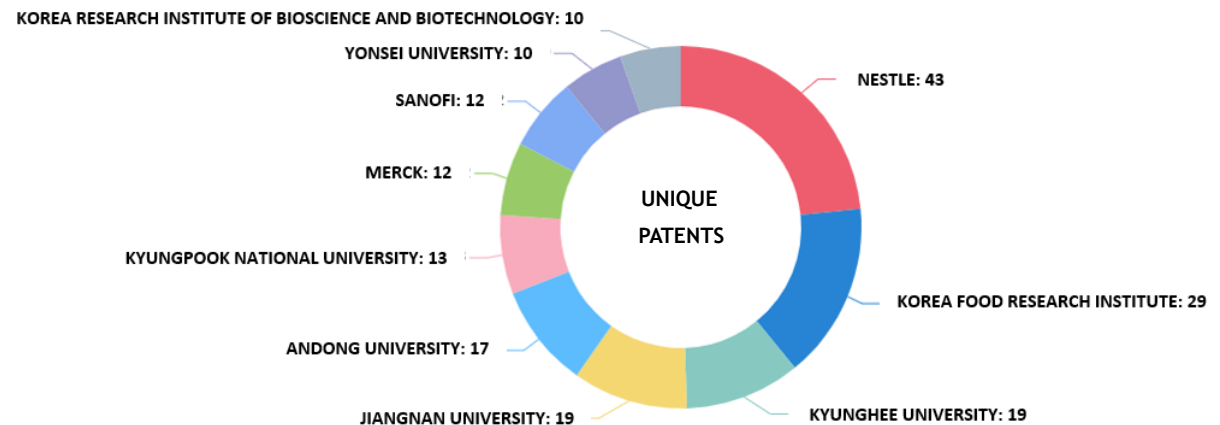


2.2.Ranking of Applicants in Metabolic Health Patent Landscape (past 20 years)



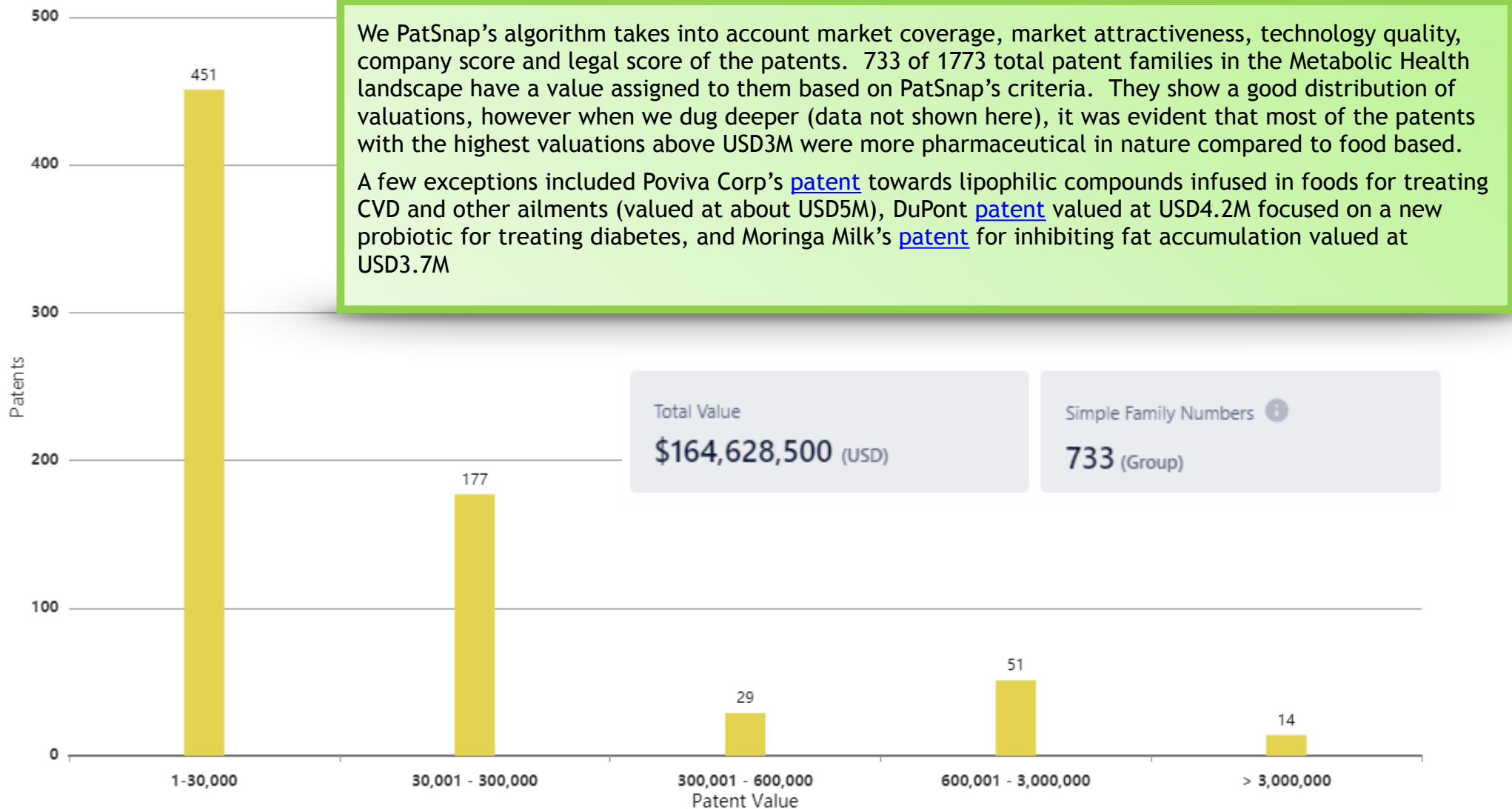
In this graph to the left, we rank companies by **total patents filed** (can include many patents filed globally for the same innovation) from the past 20 years.

Big players such as Nestle, Sanofi and Nutricia continue to dominate the landscape.

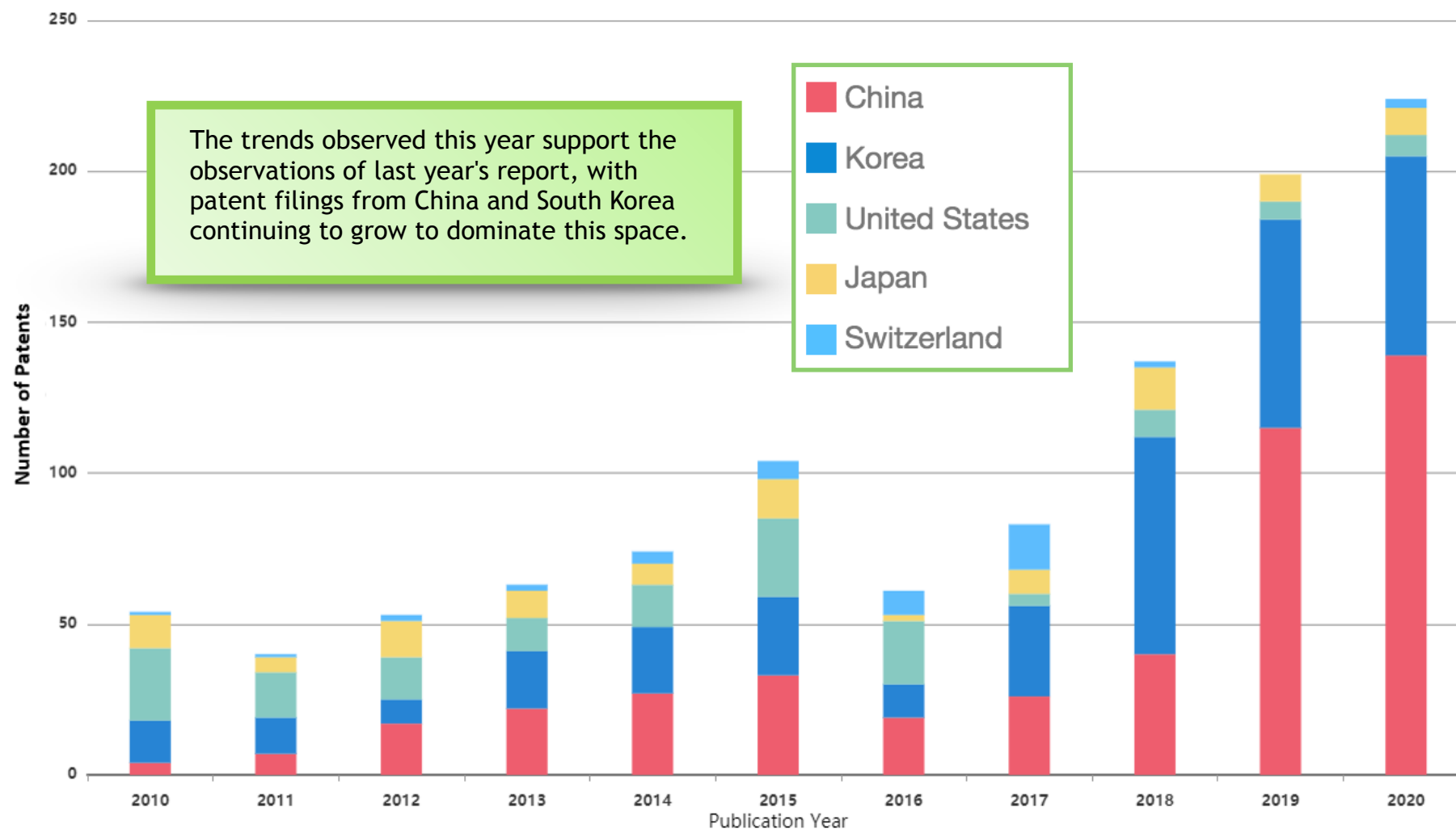


In this graph to the right, we rank companies by **number of unique patents** over the past 20 years (not biased towards large patent families of multinationals). Once again, the strong presence of Chinese and Korean filers, as well as patent originating from universities and research institutes continues to be a noticeable theme.

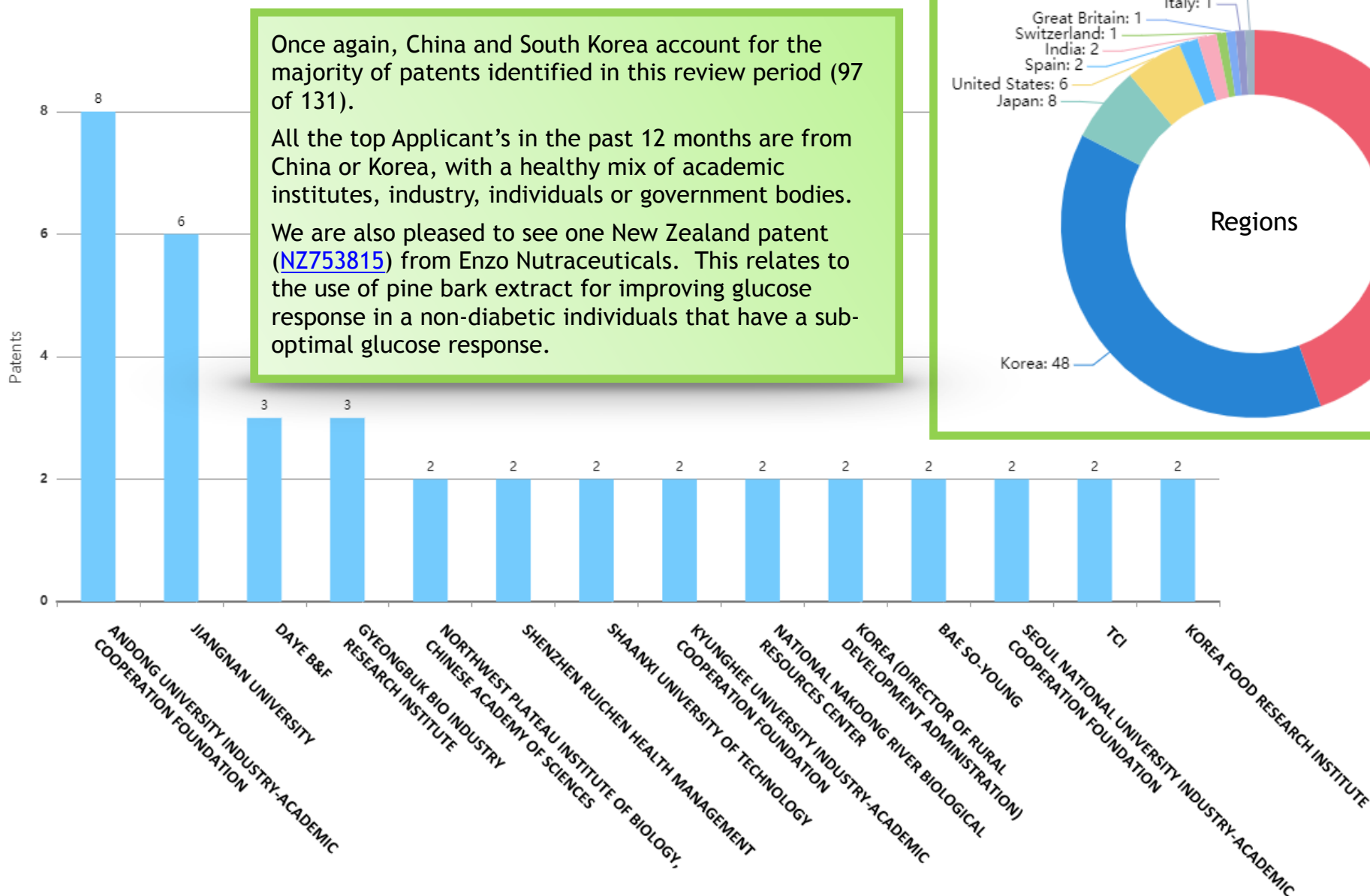
2.3. Patent Values of Metabolic Health Patents (past 20 years)



2.4.Countries Generating the Most Innovation (past 20 years)

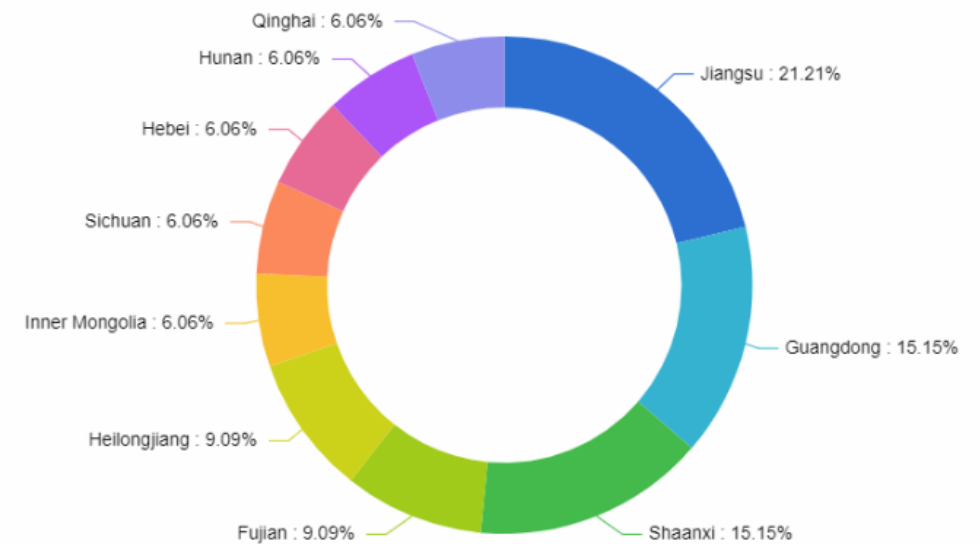
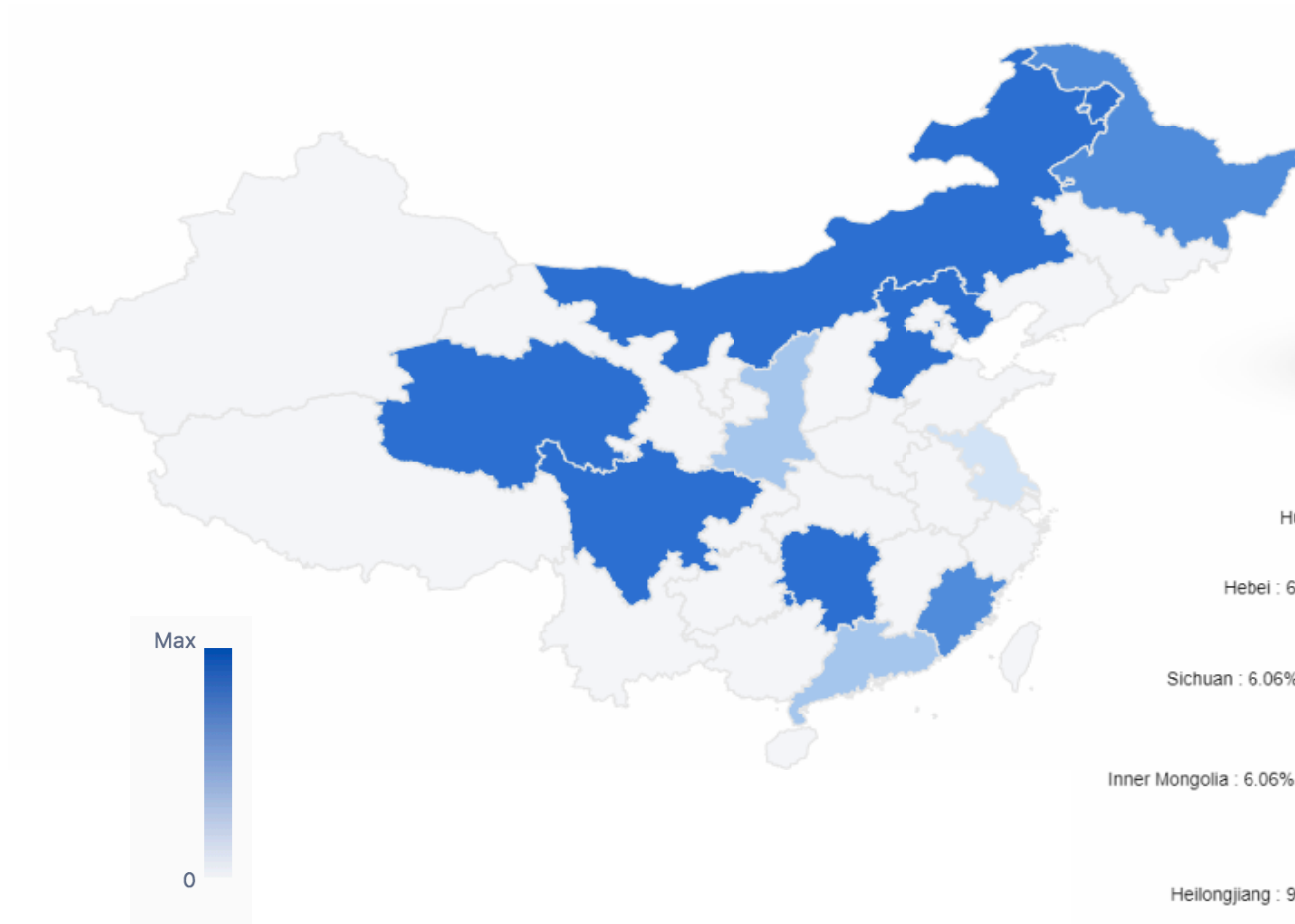


2.5. Top Applicants And Regions (past 12 months)



2.6.Chinese Patent Applications by Province (past 12 months)

Jiangsu and Guangdong provinces continue to contribute the most innovation based on numbers of patent filings. Other provinces such as Shandong and Hebei, are no longer as prominent as they were in last year's report. This may provide insight into those regions of China where interest in the metabolic health food industry is changing.

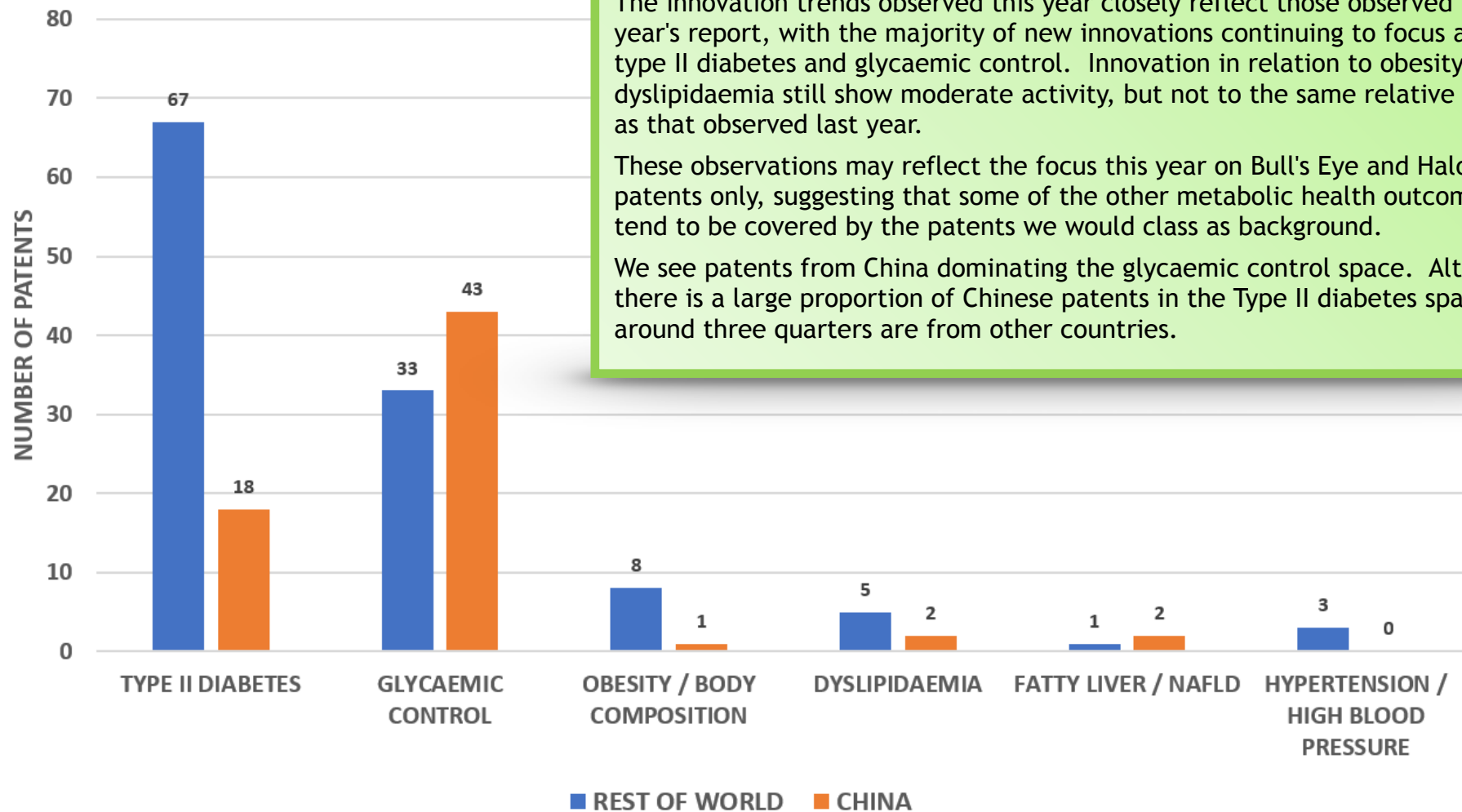


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When we look at the 50 patents arising from China (as our key export market), we can see some of the key themes based on the number of times the terms are mentioned throughout the patent landscape. This helps us to visualise food health relationships relevant in China. This does not include any traditional herbal medicine based patents which have been extracted out and shown on the next page for reference only. Blood sugar is a prominent theme seen through the Chinese patents, supporting that pre-diabetes is a strong target for HVN and our target Chinese export market.

2.8. Health Focus within Metabolic Health (past 12 months)

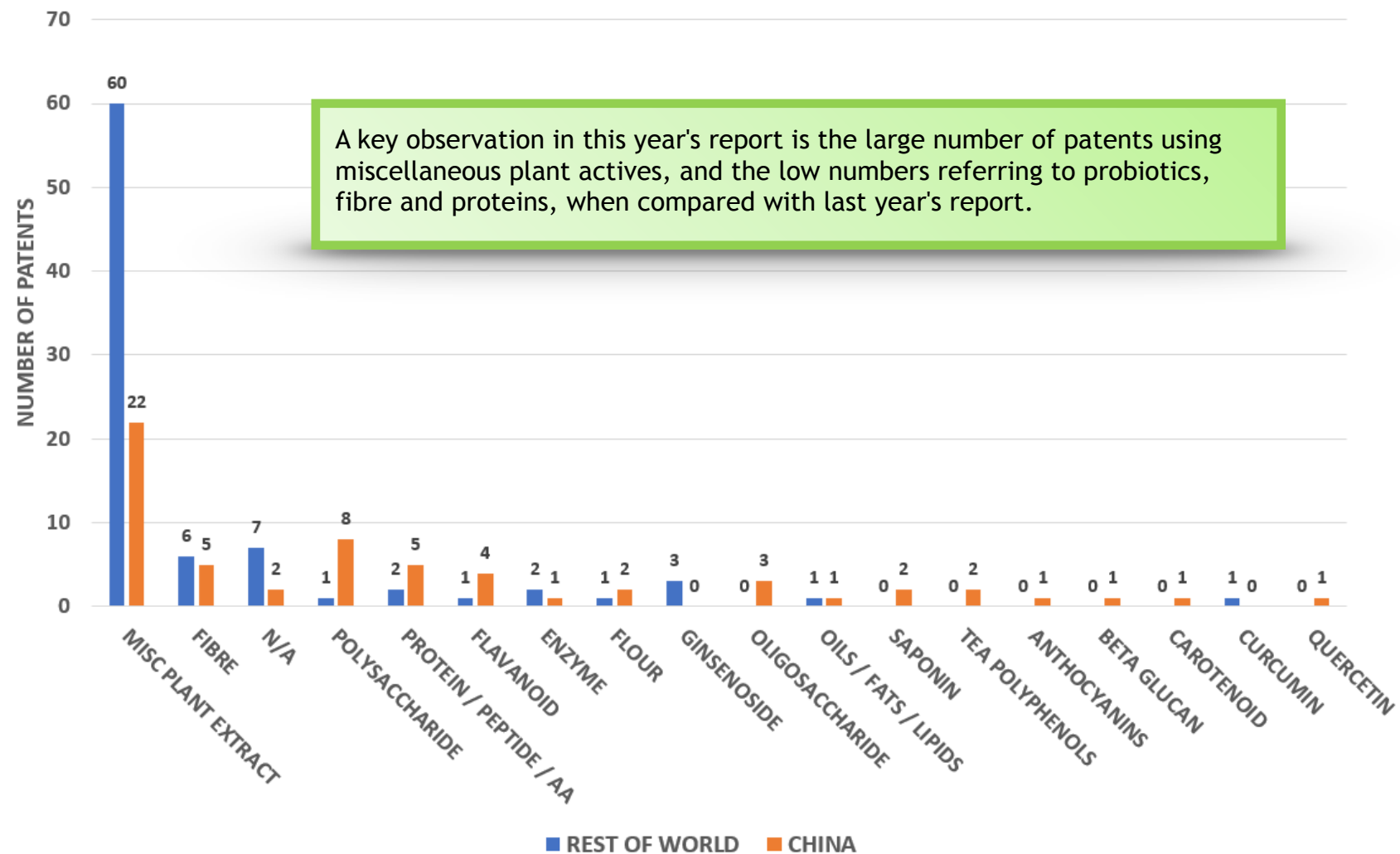


The innovation trends observed this year closely reflect those observed in last year's report, with the majority of new innovations continuing to focus around type II diabetes and glycaemic control. Innovation in relation to obesity and dyslipidaemia still show moderate activity, but not to the same relative level as that observed last year.

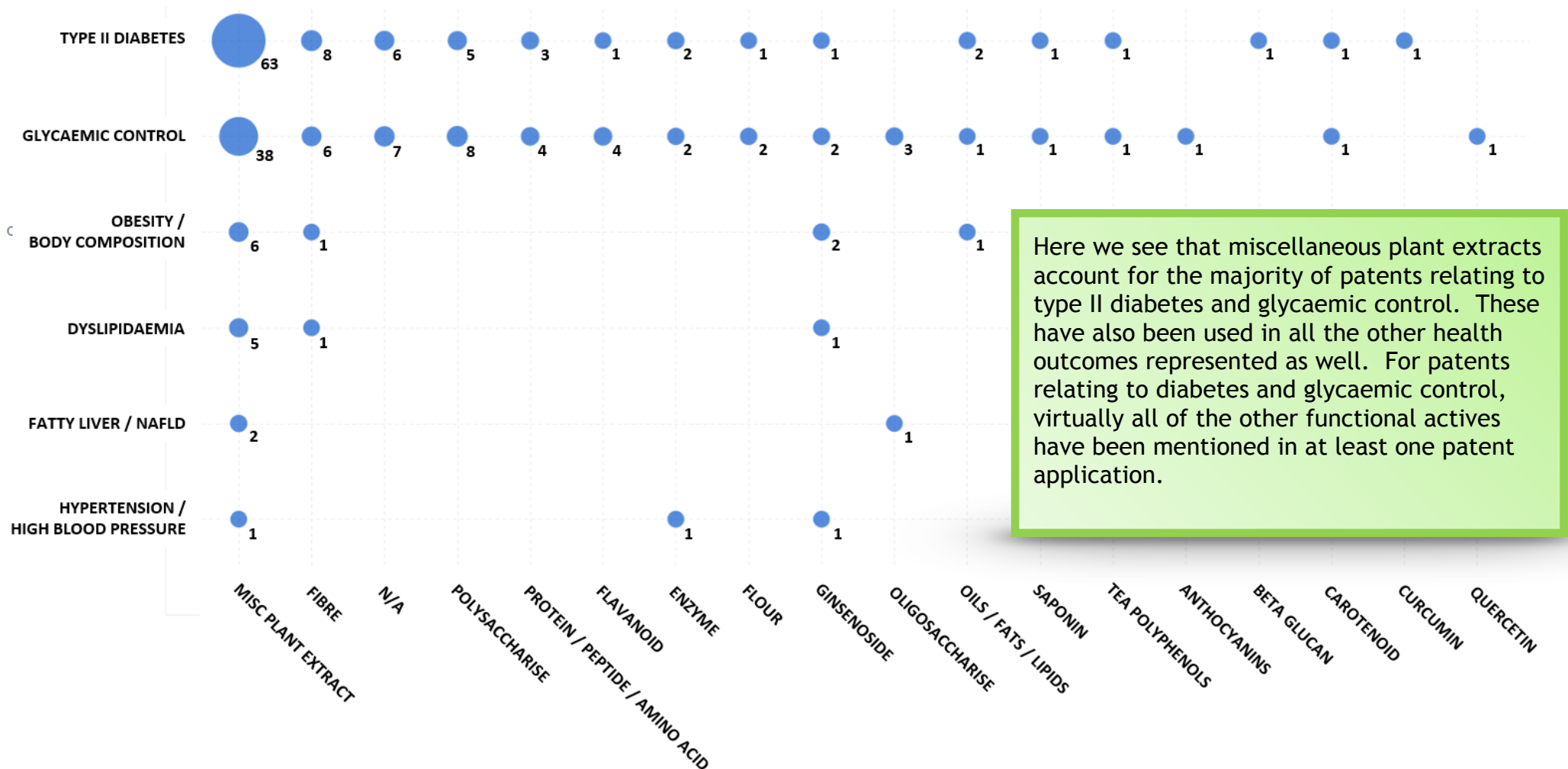
These observations may reflect the focus this year on Bull's Eye and Halo patents only, suggesting that some of the other metabolic health outcomes tend to be covered by the patents we would class as background.

We see patents from China dominating the glycaemic control space. Although there is a large proportion of Chinese patents in the Type II diabetes space, around three quarters are from other countries.

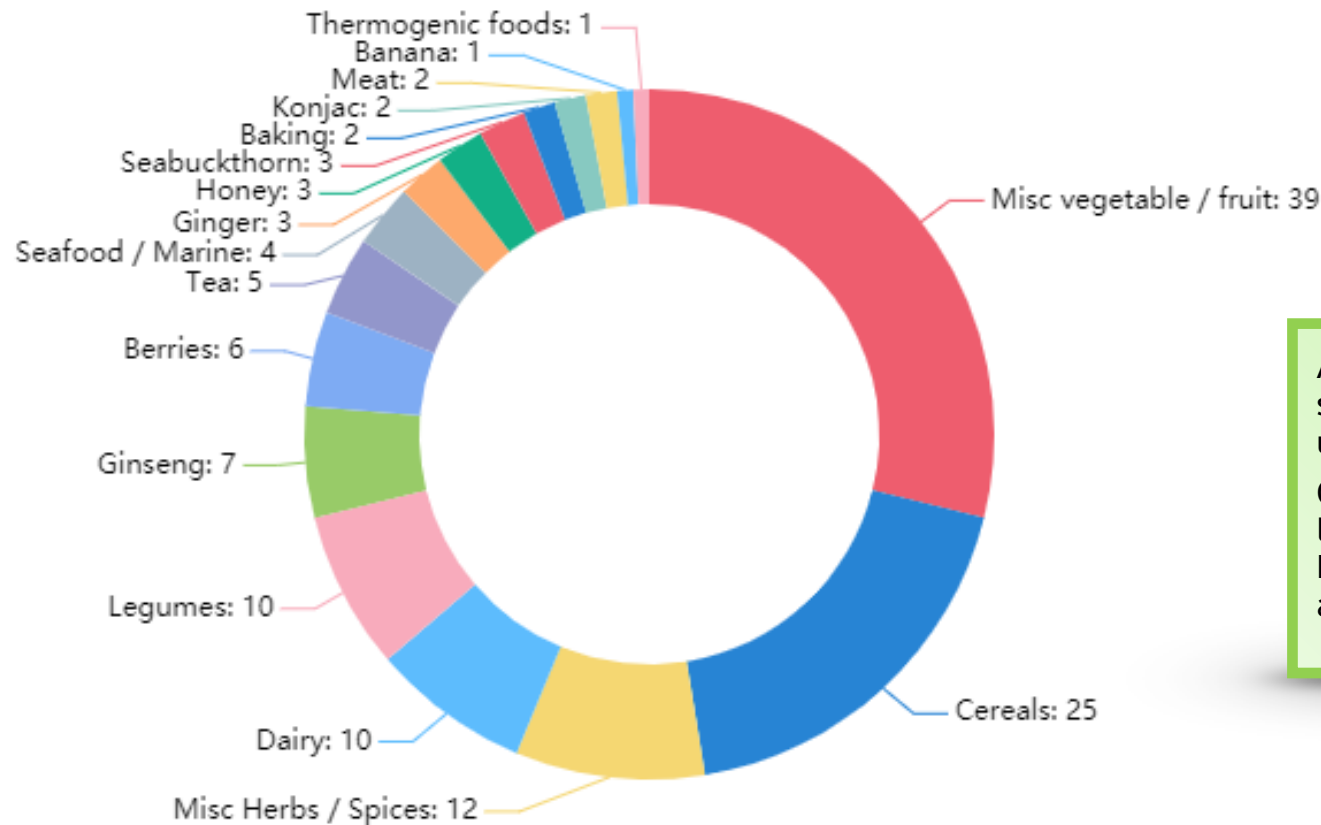
2.9.Functional Actives Linked to Metabolic Health (past 12 months)



2.10. Metabolic Health Outcomes vs Functional Actives (past 12 months)



2.11. Food Links in the Metabolic Health Patent Landscape (past 12 months)



As with last year's report, we see a good spread of food linkages that we in NZ can utilise in our pipeline.

Of note is the increase in innovation around legumes as well as mixed herbs and spices. However, patents relating to kumara appear much less apparent this year.

3.BULL'S EYE PATENTS

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Dioscorea alata rice cake and preparation method thereof	CN111248403A	2020-06-09	Guixi Gaozihong Agriculture and Forestry Development Co., Ltd.	Glycaemic control	Anthocyanins	Cereals Misc vegetable / fruit Ginger
Application of Chilufruit enzyme vinegar to preparation of functional foods for assisting in reducing blood sugar	CN111513319A	2020-08-11	Chi Dijun	Glycaemic control	Enzyme	Misc vegetable / fruit
Functional food	WO2020261132A1	2020-12-30	BATTOIA, ROBERTO I MARTINEZ DEL VALLE, MARIA JOSÉ	Glycaemic control	Fibre	Baking
Application of flavonoid C-glycoside compound	CN111568913A	2020-08-25	Xiamen Medical College	Glycaemic control	Flavanoid	Seafood / Marine
Preparation method and application of tartary buckwheat rice noodles	CN111480771A	2020-08-04	Jiangnan University	Glycaemic control	Flavanoid	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Preparation method and application of instant rice noodles suitable for people with hyperglycemia and people wanting to lose weight	CN111789218A	2020-10-20	Suzhou Gurun Shangshan Biological Technology Co., Ltd.	Glycaemic control	Flavanoid	Cereals
Low-GI steamed bread containing buckwheat flour and naked oats flour, and preparation method of low-GI steamed bread	CN111772095A	2020-10-16	Xihua University	Glycaemic control	Flavanoid	Baking Cereals
Method for preparing rice flour with low glycemic index	WO2021017231A1	2021-02-04	JIANGNAN UNIVERSITY	Glycaemic control	Flour	Cereals
Formula and making method of Oenanthe sinensis noodles	CN111642690A	2020-09-11	Shenzhen Suzao Future Cress Industry Co., Ltd.	Glycaemic control	Flour	N/A
Food composition comprising green banana and inulin	WO2021007067A1	2021-01-14	BRAUUS LLC	Glycaemic control	Misc Plant Extract	Banana
Composition and method for improving glucose response	NZ753815A	2020-11-27	ENZO NUTRACEUTICALS LIMITED	Glycaemic control	Misc Plant Extract	Thermogenic foods

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Method for production of dietary marmalade of sea-buckthorn	RU2738269C1	2020-12-11	FEDERALNOE GOSUDARSTVENNOE BYUDZHETNOE OBRAZOVATELNOE UCHREZHDENIE VYSSHEGO OBRAZOVANIYA "DAGESTANSKIY GOSUDARSTVENNYY AGRARNYY UNIVERSITET IMENI M.M. DZHAMBULATOVA" (FGBOU VO DAGESTANSKIY GAU)	Glycaemic control	Misc Plant Extract	Seabuckthorn
Food composition, for alleviating diabetes, comprising omija and bean juice, and preparation method thereof	WO2020149506A1	2020-07-23	KOREA FOOD RESEARCH INSTITUTE	Glycaemic control	Misc Plant Extract	Berries Legumes
Pasta with a low glycaemic index	WO2021009657A1	2021-01-21	WYTWÓRNIA MAKARONU DOMOWEGO POLMAK S.A.	Glycaemic control	Misc Plant Extract	Cereals
Mujigae-tteok comprising beet, onion and spinach and producing method thereof	KR1020200068287A	2020-06-15	Gwangju University Industry-Academic Cooperation Foundation	Glycaemic control	Misc Plant Extract	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Fagopyrum tararicum blood sugar reducing extract and preparation method thereof	CN111588036A	2020-08-28	Agricultural Products Processing Research Institute, Shanxi Academy of Agricultural Sciences	Glycaemic control	Misc Plant Extract	Cereals
Fermented grape juice beverage and preparation method thereof	CN111357906A	2020-07-03	Guangzhou Haoen Fengshi Food Co., Ltd.	Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Honey having function of regulating blood sugar	CN111227213A	2020-06-05	Xuzhou Green Wild Food Co., Ltd.	Glycaemic control	Misc Plant Extract	Honey Misc vegetable / fruit
Guava leaf beverage	CN111772074A	2020-10-16	Chengdu Tongling Chinese Herbal Pieces Selection Co., Ltd.	Glycaemic control	Misc Plant Extract	N/A
Nutritional dietary composition and edible product	HK40021665A	2020-11-06	Shenzhen Ruichen Health Management Co., Ltd.	Glycaemic control	Misc Plant Extract	Legumes
Preparation method of eurotium cristatum fermented balsam pear juice	CN111280353A	2020-06-16	Hunan Tea Industry Group Co., Ltd.	Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Lotus seed oolong milk tea with low GI value and preparation method of tea	CN111264621A	2020-06-12	Fujian Agriculture and Forestry University	Glycaemic control	Misc Plant Extract	Tea

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Propolis and bitter gourd composition with auxiliary hypoglycemic effect and preparation method thereof	CN111387502A	2020-07-10	Xi'an Royal Healthcare Products Co., Ltd.	Glycaemic control	Misc Plant Extract	Honey Misc vegetable / fruit
Processing method of pumpkin hypoglycemic chewable freshly-squeezed rice tablet	CN111838598A	2020-10-30	Changrong Huitong (Tianjin) Food Technology R&D Co., Ltd.	Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Isodon glaucocalyx root extract, extraction and separation method and application of isodon glaucocalyx root extract	CN111848376A	2020-10-30	Northwest University	Glycaemic control	Misc Plant Extract Quercetin	Misc Herbs / Spices
Functional yoghurt with low glycaemic index and preparation process	RO134358A0	2020-08-28	UNIVERSITATEA "ȘTEFAN CEL MARE" DIN SUCEAVA	Glycaemic control	N/A	Dairy
Low-glycemic index (low-GI) full-nutrient formula powder used as single nutrition source of diabetic people and preparation method thereof	CN111418833A	2020-07-17	Hebei Sanyuan Food Co., Ltd.	Glycaemic control	N/A	Dairy

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Food with auxiliary blood sugar reducing function	CN111685184A	2020-09-22	Sheng Qinghai	Glycaemic control	N/A	Dairy
Functional jasmine oligosaccharide oral liquid and application thereof	CN111248440A	2020-06-09	Guangxi Academy of Agricultural Sciences	Glycaemic control	Oligosaccharide	N/A
Carbohydrate combination used for assisting in decreasing blood sugar	CN111227254A	2020-06-05	Hestia Health Technology (Wuxi) Co., Ltd.	Glycaemic control	Oligosaccharide Polysaccharide	Cereals
Preparation method of digestion-resistant starch	CN111264867A	2020-06-12	Jiangnan University	Glycaemic control	Polysaccharide	Cereals
Preparation method of slowly digestible starch	CN111264840A	2020-06-12	Jiangnan University	Glycaemic control	Polysaccharide	Cereals
Yoghourt with resistant dextrin and preparation method thereof	CN111280251A	2020-06-16	Gu Mingyou	Glycaemic control	Polysaccharide	Dairy
High-protein low-sugar food taking potatoes as main raw material and preparation method thereof	CN111838604A	2020-10-30	Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences	Glycaemic control	Protein / Peptide / AA	Legumes Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Bitter gourd peptide composition	TW202034790A	2020-10-01	Mainland Business Shenzhen Chunrui Technology Development Co., Ltd.	Glycaemic control	Protein / Peptide / AA	Misc vegetable / fruit
Sea cucumber peptide formula food for special medical purposes and preparation method thereof	CN111466565A	2020-07-31	Guangzhou Cishan Biological Technology Co., Ltd.	Glycaemic control	Protein / Peptide / AA	Seafood / Marine
High-fiber low-sugar instant bean flour and preparation method thereof	CN111802468A	2020-10-23	Heilongjiang Wandashan Dairy Co., Ltd.	Glycaemic control	Protein / Peptide / AA Fibre	Legumes
Extraction, purification and preparation technology of blood sugar reducing component saponin in puncturevine caltrop fruit, puncturevine caltrop fruit saponin extract and application	CN111494440A	2020-08-07	Wuhan University of Light Industry	Glycaemic control	Saponin	Misc vegetable / fruit
Resistant starch milk tea solid beverage and preparation method thereof	CN111248313A	2020-06-09	Institute of Agricultural Engineering Technology, Fujian Academy of Agricultural Sciences	Glycaemic control	Tea polyphenols	Tea Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Konjac functional food and preparation method thereof	CN111513273A	2020-08-11	Shaanxi University of Technology	Glycaemic control Dyslipidaemia	Fibre	Konjac
Multifunctional konjaku flour and preparation method thereof	CN111264813A	2020-06-12	Shaanxi University of Technology	Glycaemic control Dyslipidaemia	Misc Plant Extract	Konjac
Blood sugar lowering and liver-protecting composition based on multi-path regulation mechanism	CN108836974B	2020-09-29	Ningbo Baierma Biological Technology Co., Ltd.	Glycaemic control Fatty Liver / NAFLD	Oligosaccharide	N/A
Methods of making ginseng yogurt fermented with the effect of improving hypertension and lowering blood sugar	KR1020200130029A	2020-11-18	DAYE B&F Co., Ltd.	Glycaemic control Hypertension / High Blood Pressure / CVD	Ginsenoside	Dairy Ginseng
Composition comprising novel ginsenoside	HK40017504A	2020-09-25	AMOREPACIFIC CORPORATION	Glycaemic control Obesity / Body composition Dyslipidaemia	Ginsenoside	Ginseng
Fruit or vegetable pomace composition and use as blood glucose modulator and Anti-diabetic agent	US20200281997A1	2020-09-10	BRANDEIS UNIVERSITY	Type II Diabetes	Fibre	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Dietary fiber composition and edible product	HK40021664A	2020-11-06	Shenzhen Ruichen Health Management Co., Ltd.	Type II Diabetes	Fibre	Misc Herbs / Spices
Cereal composition as well as preparation method and application thereof	CN111436561A	2020-07-24	Wilmar (Shanghai) Biotechnology R&D Center Co., Ltd.	Type II Diabetes	Fibre Flour	Cereals
Pharmaceutical composition for prevention or treatment of diabetes comprising the mixed extract of vegetable natural products having the effect on removal of swelling and health functional food for prevention or improvement of diabetes comprising the same	KR102149254B1	2020-09-01	Hyojun Lee I Face Blanc Co., Ltd. I Serendi Farm Co., Ltd.	Type II Diabetes	Flavanoid	Misc vegetable / fruit Ginger
Pharmaceutical composition containing complex Rubus crataegifolius, Crataegus pinnatifida Bunge, Cinnamomum cassia extracts for prevention or treatment of metabolic syndrome	KR102021003019 2A	2021-03-17	Leeds Biotech Co., Ltd.	Type II Diabetes	Misc Plant Extract	Berries Misc vegetable / fruit Misc Herbs / Spices

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for improving, preventing or treating diabetes mellitus and obesity comprising the ATDIET-801	KR102203550B1	2021-01-18	Health Scotch Biotechnology Co., Ltd. Palmsville Co., Ltd. Wonkwang University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc Herbs / Spices
A process of making strands, from green zucchini vegetables	IN202041049648A	2020-12-04	BANU PRIYA YOGESWARAN	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Application of cranberry or extract thereof in preparation of medications or health-care food for treating, delaying or alleviating age-related diseases	EP3689361A1	2020-08-05	BY-HEALTH CO., LTD.	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Composition for preventing, ameliorating, or treating diabetes, comprising lactic acid bacteria fermentation product of paeonia lactiflora extract as active ingredient	WO2020116962A1	2020-06-11	KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY	Type II Diabetes	Misc Plant Extract	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for skin whitening comprising extract of Ruby-S apple peel as an active ingredient	KR102202174B1	2021-01-13	Kyungpook National University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Pharmaceutical composition comprising the extract of an unripe apple as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR102216211B1	2021-02-16	Cheongsong-gun, Gyeongsangbuk-do (Director of Agricultural Technology Center)	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
A composition for preventing or treating diabetes mellitus comprising Forsythia koreana extract or fermented extract thereof	KR102169089B1	2020-10-23	Kyunghee University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A
Composition for preventing or treating prediabetes or diabetes comprising fractionation of Gentiana scabra extracts	KR102189149B1	2020-12-09	Kyunghee University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for Anti-Diabetes Using an Extract of <i>Lespedeza cuneata</i>	KR102161353B1	2020-09-29	National Nakdong River Biological Resources Center	Type II Diabetes	Misc Plant Extract	Legumes
Composition for Anti-Diabetes Using an Extract of <i>Lespedeza cuneata</i> Obtained Using a Mixed Solvent of Water and Ethanol	KR1020200111664A	2020-09-29	National Nakdong River Biological Resources Center	Type II Diabetes	Misc Plant Extract	Legumes
Anti-diabetic food manufacturing method	KR102154027B1	2020-09-09	Agricultural Corporation Youngin Bio Co., Ltd.	Type II Diabetes	Misc Plant Extract	Cereals Tea Misc vegetable / fruit
A composition for improving, preventing and treating of diabetes mellitus comprising Milk thistle and <i>Helianthus tuberosus</i>	KR102233672B1	2021-03-30	Jangsu Food Co., Ltd.	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Liquid composition for stick-type container comprising active mountain-cultivated ginseng extract having increased ginsenosides of human body absorption type, and preparation method thereof	KR102150162B1	2020-08-31	Hamyangsanyangsa m Co., Ltd.	Type II Diabetes	Misc Plant Extract	Honey Ginseng

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Manufacturing method of antidiabetic juk comprising nipa fruticans wurmb	KR102198954B1	2021-01-06	Agricultural Corporation Nipa Bio Co., Ltd. Dongduk Women's University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A
A pharmaceutical composition comprising extract from germinated gemmule of bean for preventing or treating diabetes mellitus	KR1020210011758A	2021-02-02	Korea (Director of Rural Development Administration)	Type II Diabetes	Misc Plant Extract	Legumes
Pharmaceutical composition comprising the extract of medicinal or edible natural products as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR1020210027721A	2021-03-11	Park Moo-soon	Type II Diabetes	Misc Plant Extract	Ginger Misc Herbs / Spices
Food Composition for Preventing and Improving Diabetes Mellitus Comprising Fermented Noni and Method for Preparing the Same	KR102151371B1	2020-09-02	Eunyoung Park	Type II Diabetes	Misc Plant Extract	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for prevention or treatment of diabetic related disease comprising extract of Symplocos spp. or compound isolated from thereof	KR1020200086207A	2020-07-16	Seoul National University Industry-Academic Cooperation Foundation Gachon University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A
Pharmaceutical composition comprising extract of heuksoojeongchal bran for the treatment and prevention of diabetes	KR1020210027836A	2021-03-11	Sunchon National University Industry-Academic Cooperation Foundation Korea (Director of Rural Development Administration)	Type II Diabetes	Misc Plant Extract	Cereals
Pharmaceutical composition comprising the extract of acorn pollen as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR102159686B1	2020-09-24	Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Pharmaceutical composition comprising the extract of darae pollen as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR102158671B1	2020-09-22	Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Pharmaceutical composition comprising the extract of moringa root as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR1020200078857A	2020-07-02	Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Pharmaceutical composition comprising the extract of rogersia podophylla as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR102216219B1	2021-02-18	Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc Herbs / Spices

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Pharmaceutical composition comprising the extract of sageretia thea as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR1020200129794A	2020-11-18	Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A
Manufacturing method of seasoning comprising powdered larva of <i>Protaetia brevitarsis</i> and seasoning manufactured thereby	KR102162684B1	2020-10-07	Lee Kyung-hoon	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit
Pharmaceutical composition comprising the ethanol tract of pine pollen as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR1020200097495A	2020-08-19	Gyeongbuk Bio Industry Research Institute Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Pharmaceutical composition comprising the extract of <i>dystaenia takesimana</i> as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR102192418B1	2020-12-16	Gyeongbuk Bio Industry Research Institute Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	Misc Herbs / Spices
Pharmaceutical composition comprising the extract of <i>Ioranthus yadoriki</i> as an effective component for prevention or treatment of diabetes and health functional food comprising the same	KR1020200113918A	2020-10-07	Gyeongbuk Bio Industry Research Institute Andong University Industry-Academic Cooperation Foundation	Type II Diabetes	Misc Plant Extract	N/A
Composition of Healthy Beverage Using Combined Organic Acid Fermentation and Fast Absorption to Help Improve Type 2 Diabetes and Adrenal Function	KR1020200104051A	2020-09-03	IGood Co., Ltd. Sojeon Environment Co., Ltd. Beautys Co., Ltd.	Type II Diabetes	Misc Plant Extract	Cereals Misc vegetable / fruit Misc Herbs / Spices

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
A composition for treating, improving or preventing of diabetes mellitus comprising extract of scutellaria baicalensis	KR102122216B1	2020-06-12	H&B9 Co., Ltd.	Type II Diabetes	Misc Plant Extract	N/A
Composition for prevention, improvement or treatment of diabetes with extracts from Scrophularia Buergeriana, Siberian ginseng, Lycii fructus root, Momordica charantia Linnaeus, Rosa rugosa	KR102147058B1	2020-08-24	CHOE MYEON	Type II Diabetes	Misc Plant Extract	Misc vegetable / fruit Ginseng
Uses of pyrenaria buisanensis extract	KR102135071B1	2020-07-20	TCI Co.LTD	Type II Diabetes	Misc Plant Extract	Tea
Application of enzymatically hydrolyzed cereal bran extract in the preparation of DPP-4 inhibitor	CN111870659A8	2020-12-22	Beijing Technology and Business University	Type II Diabetes	Misc Plant Extract	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Anti-saccharification and anti-oxidation composition and preparation method and application thereof	CN111903880A	2020-11-10	Xi'an Giant Bio-Gene Technology Co., Ltd.	Type II Diabetes	Misc Plant Extract	Berries Legumes Misc vegetable / fruit Ginseng
Health functional food composition for prevention of diabetes	KR102133015B1	2020-07-10	YANG SUNG SIM	Type II Diabetes	Misc Plant Extract Fibre	Berries Cereals
Development of orange peel and oat dietary fiber meal replacement powder	CN111328978A	2020-06-26	Northeast Agricultural University	Type II Diabetes	Misc Plant Extract Fibre Beta glucan	Cereals Misc vegetable / fruit
Health-care food	CN111616370A	2020-09-04	Chu Weidong	Type II Diabetes	Misc Plant Extract Protein / Peptide / AA	Berries Misc vegetable / fruit Ginseng
Manufacturing method of extract from sulfur-fed duck for preventing or improving of diabetes	KR1020200063494A	2020-06-05	Deokdam Goolsu Agricultural Co., Ltd.	Type II Diabetes	N/A	Meat
Inflammatory cytokine production inhibitor	AU2019334595A1	2021-03-25	SAISEI PHARMA CO., LTD.	Type II Diabetes	N/A	Dairy
Preparing method of noodle for improving diabetes, and the noodle obtained thereby	KR1020210012287A	2021-02-03	Jinho Pyo	Type II Diabetes	Protein / Peptide / AA	Meat

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Preparation method and use of formula combining fiveleaf gynostemma herb and white tea for preventing type 2 diabetes	CN111450173A	2020-07-28	Shenyang Pharmaceutical University	Type II Diabetes	Protein / Peptide / AA Tea polyphenols Polysaccharide	Tea Misc Herbs / Spices
Novel steroid saponin compound, preparation method thereof and application thereof in preparation of medicine for treating type 2 diabetes mellitus	CN111732624A	2020-10-02	Henan University	Type II Diabetes	Saponin	N/A
Blood sugar level rise inhibitor, diabetes inhibitor and food composition	CN112566647A	2021-03-26	Uluna Co., Ltd.	Type II Diabetes Glycaemic control	Carotenoid	N/A
Hyperglycemia inhibitory composition	JP2020156391A	2020-10-01	Morinaga Milk Industry Co., Ltd.	Type II Diabetes Glycaemic control	Fibre	Misc vegetable / fruit
Methods for controlling blood sugar, promoting fat metabolism and manufacturing yogurt of diet function by yakon extract	KR1020200130031A	2020-11-18	DAYE B&F Co., Ltd.	Type II Diabetes Glycaemic control	Misc Plant Extract	Dairy

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Lowering blood glucose level with water-extracted products of artocarpus heterophyllus kernels	TW202102245A	2021-01-16	CHANG JUNG CHRISTIAN UNIVERSITY	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Olive oil enriched with oleanolic acid, process for its preparation and use thereof	AU2019301805A1	2021-01-21	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC) I SERVICIO ANDALUZ DE SALUD	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Methods and products	GB2583732A	2020-11-11	C-PASTE LIMITED	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Formulations for treating metabolic syndrome and increasing energy levels	US20210038672A1	2021-02-11	HEALTHRITE PARTNERS, LLC	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Compound hexadecaphloretol isolated from Ishige okamurae and use thereof	US10961176B2	2021-03-30	JEJU NATIONAL UNIVERSITY INDUSTRY-ACADEMIC COOPERATION FOUNDATION	Type II Diabetes Glycaemic control	Misc Plant Extract	Seafood / Marine
Cortex lycii tea formula	US20200237846A1	2020-07-30	TAN, HONGPING I TAN, BOONTECK	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc Herbs / Spices

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Dietary supplement for glycemia control and diabetes prevention	US10757961B2	2020-09-01	WORLD PHARMACEUTICAL TECHNOLOGY, LLC.	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Fermentation product of mung bean hull and uses of the same	KR102020006803 5A	2020-06-15	TCI Co.LTD	Type II Diabetes Glycaemic control	Misc Plant Extract	Legumes
Ultrasonic extraction hippophae rhamnoides Linn. extract and extraction method and application thereof	CN111939183A	2020-11-17	Northwest Plateau Institute of Biology, Chinese Academy of Sciences	Type II Diabetes Glycaemic control	Misc Plant Extract	Seabuckthorn
Effective part of hypoglycemic plant extract and preparation method and application thereof	CN108403980B	2020-10-16	Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc Herbs / Spices
Hypoglycemic application of Mongolian medicine Cymbaria ethyl acetate extract and n-butyl alcohol extract	CN111281923A	2020-06-16	Traditional Chinese Medicine Hospital of Inner Mongolia Autonomous Region	Type II Diabetes Glycaemic control	Misc Plant Extract	N/A
Preparation method of quinoa low-GI ingredient	CN111838534A	2020-10-30	Jiangnan University	Type II Diabetes Glycaemic control	Misc Plant Extract	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Application of Annona muricata fruit extract in preparation of anti-diabetic drugs or health-care products	CN111904988A	2020-11-10	Hainan Medical College	Type II Diabetes Glycaemic control	Misc Plant Extract	Misc vegetable / fruit
Koji mold, enzyme of koji mold origin, agent for inhibiting increase of blood sugar level, food and drink, pharmaceutical composition, food additive, supplement and method for producing the same	JP2020127373A	2020-08-27	Marukome Co., Ltd.	Type II Diabetes Glycaemic control	Misc Plant Extract Enzyme	N/A
Hypoglycemic canned fruit and vegetable and preparation method thereof	CN111990616A	2020-11-27	Huarong County Harmony Vegetable Industry Co., Ltd.	Type II Diabetes Glycaemic control	Misc Plant Extract Polysaccharide	Misc vegetable / fruit
Methods for the manufacture of yogurt products with the effect of blood sugar control on diabetics and potential patients	KR1020200130030A	2020-11-18	DAYE B&F Co., Ltd.	Type II Diabetes Glycaemic control	N/A	Dairy
Delicious low-glycemic index formula rice and its application	US20200359664A1	2020-11-19	JIANGNAN UNIVERSITY	Type II Diabetes Glycaemic control	N/A	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Fermented milk having high dipeptidyl peptidase iv inhibition activity and its production method	JP2020120652A	2020-08-13	Tottori University	Type II Diabetes Glycaemic control	N/A	Dairy
Fermented milk having hyperglycemia inhibitory action	JP2020115783A	2020-08-06	Meiji Co., Ltd.	Type II Diabetes Glycaemic control	N/A	Dairy
Low-sugar low-fat oat powder adopting biological activity fermentation	CN111227170A	2020-06-05	Guangdong Jinxiang Food Co., Ltd.	Type II Diabetes Glycaemic control	Oils / Fats / Lipids Fibre	Cereals
Yellow-green frizzled mushroom polysaccharide, preparation method and medical use in preventing and treating diabetes	CN108570116B	2020-10-02	Jilin Agricultural University	Type II Diabetes Glycaemic control	Polysaccharide	N/A
Prophylactic and therapeutic agents for diabetes, blood glucose level elevation inhibitor, blood glucose level spike inhibitor, as well as glucose uptake inhibitor	JP2020180075A	2020-11-05	Teikyo University I Genome Drug Discovery Research Institute Co., Ltd.	Type II Diabetes Glycaemic control	Polysaccharide	Legumes

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Armillaria mellea mycelium polysaccharide with hypoglycemic effect	CN111253496A	2020-06-09	Anhui University	Type II Diabetes Glycaemic control	Polysaccharide	N/A
Nutraceuticals for the management of conditions related to type 2 diabetes	US20200253259A1	2020-08-13	QUINTESSENCE NUTRACEUTICALS, LLC	Type II Diabetes Glycaemic control Dyslipidaemia	Misc Plant Extract	Cereals
Composition for preventing, improving or treating diabetic complications comprising fraction of sesame meal extract or compound isolated from the fraction as effective component	KR102137593B1	2020-07-24	Daegu University Industry-Academic Cooperation Foundation I Dongbang Oil Co., Ltd.	Type II Diabetes Glycaemic control Dyslipidaemia	Misc Plant Extract	Misc Herbs / Spices
Dietary fiber composition	WO2021014469A1	2021-01-28	SAVANGIKAR, CHITRA VASANT I SAVANGIKAR, VASANT ANANTRAO	Type II Diabetes Glycaemic control Obesity / Body composition	Fibre	Misc vegetable / fruit
Sea buckthorn extract and uses thereof	CN111773257A	2020-10-16	Northwest Plateau Institute of Biology, Chinese Academy of Sciences	Type II Diabetes Glycaemic control Obesity / Body composition	Misc Plant Extract	Seabuckthorn
Peroxisome proliferator-activated receptor (PPAR) activating composition	JP2020164453A	2020-10-08	TAKAGI SHOTEN KK	Type II Diabetes Glycaemic control Obesity / Body composition Dyslipidaemia	Misc Plant Extract	Seafood / Marine

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Fermented rice including cudrania and producing process thereof	KR1020200066858A	2020-06-11	Bae So-young	Type II Diabetes Hypertension / High Blood Pressure / CVD	Enzyme	Berries Cereals
Cooked rice including cudrania and producing process thereof	KR1020200066857A	2020-06-11	Bae So-young	Type II Diabetes Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Cereals
Production method of belloflower syrup	KR1020200080929A	2020-07-07	Sanchon Village Agricultural Co., Ltd.	Type II Diabetes Obesity / Body composition	Misc Plant Extract	N/A
Composition comprising extract of Gynostemma longipes VK1 or compounds isolated thereof for preventing or treating AMPK-related diseases	KR102143342B1	2020-08-12	Seoul National University Industry-Academic Cooperation Foundation Hanoi University of Pharmacy	Type II Diabetes Obesity / Body composition	Misc Plant Extract	N/A
Jeogok fermentation having anti-obesity or anti-diabetic activity and use of stachydrine compound form the jeogok fermentation	KR1020200128299A	2020-11-12	Korea Food Research Institute	Type II Diabetes Obesity / Body composition	Misc Plant Extract	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Platycodon grandiflorum Liquid composition for stick-type container having increased ginsenosides of human body absorption type, and preparation method thereof	KR102132537B1	2020-07-09	Jirisan Macheon Agricultural Cooperative Association	Type II Diabetes Obesity / Body composition	Misc Plant Extract Ginsenoside	Ginseng
Compositions and methods using a combination of curcumin and an omega-3 fatty acid for cellular energy	AU2019374925A1	2021-04-01	SOCIÉTÉ DES PRODUITS NESTLÉ S.A.	Type II Diabetes Obesity / Body composition	Oils / Fats / Lipids Curcumin	N/A

4. HALO PATENTS

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Application and preparation method of composition for improving blood fat, fatty liver and steatohepatitis and regulating blood sugar	CN111821393A	2020-10-27	Agricultural Science and Technology Research Institute	Glycaemic control Fatty Liver / NAFLD	Misc Plant Extract	Cereals
Compositions for Improving, Preventing or Treating Fatty Liver, Dyslipidemia or Metabolic Syndrome Comprising Valeriana fauriei Root Extract	KR102020014397 5A	2020-12-28	Korea Food Research Institute	Fatty Liver / NAFLD Dyslipidaemia	Misc Plant Extract	N/A

5. BACKGROUND PATENTS

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Lactobacillus paracasei and application thereof	CN111560331A	2020-08-21	Nobake (Wuhan) Biotechnology Co., Ltd.	Glycaemic control	Microbe / probiotic	N/A
Bamboo shoot soaked rice cake and preparation method thereof	CN111990597A	2020-11-27	Sichuan Oriental Staple Food Industry Technology Research Institute	Glycaemic control	Misc Plant Extract	Cereals
Fragrant lipid-lowering health-care instant coffee powder and preparation method thereof	CN111513167A	2020-08-11	Qingdao Agricultural University	Glycaemic control Dyslipidaemia	Caffeine	Berries Konjac
Preparation method of drum-dried kudzu vine root whole powder	CN111743115A	2020-10-09	Jiangxi Guanshan Yuege Industry Development Co., Ltd.	Glycaemic control Dyslipidaemia	Fibre	Misc vegetable / fruit
Oat dietary fiber powder and preparation method thereof	CN111374264A	2020-07-07	Jiangsu Weile Yisheng Food Technology Co., Ltd.	Glycaemic control Dyslipidaemia	Flour	Cereals
Composition with functions of regulating blood sugar and blood fat and application of composition	CN111603492A	2020-09-01	Shaanxi Giant Biotechnology Co., Ltd.	Glycaemic control Dyslipidaemia	Ginsenoside	Ginseng

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Functional food of probiotic preparation having blood glucose lowering effect	WO2020211831A1	2020-10-22	GUANGDONG INSTITUTE OF MICROBIOLOGY (GUANGDONG DETECTION CENTER OF MICROBIOLOGY)	Glycaemic control Dyslipidaemia	Microbe / probiotic	N/A
A strain of Lactobacillus acidophilus La-SJLH001 with probiotic functions such as regulating blood sugar and cholesterol levels and its application	CN109182207B	2020-10-27	Beijing Shoujia Lihua Technology Co., Ltd. University of Science and Technology Beijing	Glycaemic control Dyslipidaemia	Microbe / probiotic	N/A
Composition for prevention or treatment of metabolic syndrome comprising viburnum stellato-tomentosum extract or fraction thereof	WO2020251085A1	2020-12-17	KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY	Glycaemic control Dyslipidaemia	Misc Plant Extract	N/A
Preparation method for apocynum venetum tea	CN111227079A	2020-06-05	Tobacco Research Institute, Chinese Academy of Agricultural Sciences	Glycaemic control Dyslipidaemia	Misc Plant Extract	Tea

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Sargassum thunbergii fucoxanthine health-care food capable of regulating blood lipid, and making method of sargassum thunbergii fucoxanthine health-care food capable of regulating blood lipid	CN111357989A	2020-07-03	Weihai Ziguang Jinaoli Biotechnology Co., Ltd.	Glycaemic control Dyslipidaemia	Misc Plant Extract	Seafood / Marine
Preparation method of flash-dried superfine kudzu vine root whole powder	CN111758934A	2020-10-13	Jiangxi Guanshan Yuege Industry Development Co., Ltd.	Glycaemic control Dyslipidaemia	Misc Plant Extract	Misc vegetable / fruit
Selenium-zinc-rich sweet potato leaf juice	CN111248376A	2020-06-09	Tan Zewen	Glycaemic control Dyslipidaemia	Misc Plant Extract	Misc vegetable / fruit
Sour cherry functional beverage and preparation method thereof	CN111743059A	2020-10-09	Huang Lai Dai Qiuping	Glycaemic control Dyslipidaemia	Misc Plant Extract	Misc vegetable / fruit
Composition having efficacy of reducing blood sugar and reducing blood lipid and application of composition	CN111802587A	2020-10-23	Heilongjiang Academy of Traditional Chinese Medicine	Glycaemic control Dyslipidaemia	Misc Plant Extract	Cereals Legumes
Black tartary buckwheat noodles and preparation method thereof	CN111838537A	2020-10-30	Zongyang County Xinchanghe Food Development Co., Ltd.	Glycaemic control Dyslipidaemia	Misc Plant Extract Flavanoid	Cereals

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition containing composite unsaturated fatty acids	CN111436611A	2020-07-24	New Yi Health Management Co., Ltd.	Glycaemic control Dyslipidaemia	Oils / Fats / Lipids	N/A
Middle-aged and elderly formula milk powder capable of improving immunity and reducing blood sugar and blood fat and preparation method thereof	CN111919890A	2020-11-13	Shijiazhuang Junlebao Dairy Co., Ltd.	Glycaemic control Dyslipidaemia	Polysaccharide	Dairy
Dietary supplement	WO2021005488A1	2021-01-14	FANTASTISK AS	Glycaemic control Dyslipidaemia	Protein / Peptide / AA	Seafood / Marine Berries
Preparation method of spirulina walnut milk	CN111820286A	2020-10-27	Yunnan Academy of Forestry and Grassland Sciences I Lijiang Yongsheng Natural Food Factory	Glycaemic control Dyslipidaemia	Protein / Peptide / AA	Misc vegetable / fruit
Food composition with effects of reducing blood sugar and blood lipid, and preparation method and application of food composition	CN111631398A	2020-09-08	Chongqing Xiaotang Health Technology Co., Ltd. I Chongqing Nutrition Society	Glycaemic control Dyslipidaemia	Protein / Peptide / AA Oligosaccharide Polysaccharide	Dairy Cereals Misc vegetable / fruit Konjac
Application of brown algae dietary fiber in preparations of drugs, foods and/or healthcare products treating or preventing metabolic syndrome	CN111671765A	2020-09-18	Institute of Oceanology, Chinese Academy of Sciences	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Fibre	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Dietary nutrition formula product applicable to regulation on hypertension, hyperlipidemia and hyperglycaemia of astronauts	CN111317099A	2020-06-23	Beijing Shenfei Aerospace Application Technology Research Institute Tianjin Xingyu Aerospace Biotechnology Co., Ltd. Wang Zhen	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Fibre Flour	Dairy Cereals Legumes Misc vegetable / fruit
Composition rich in dietary fibers, cereal dietary meal package solid beverage and preparation method of cereal dietary meal package solid beverage	CN111227260A	2020-06-05	Guangdong Quantum Hi-Tech Microecological Medical Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Fibre Oligosaccharide	Cereals Legumes
Formula and production process of mango and pleurotus citrinopileatus composite nutritional beverage	CN111264726A	2020-06-12	Baise College	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Flavanoid Polysaccharide	Misc vegetable / fruit
Preparation method of hericium erinaceus jelly	CN111248419A	2020-06-09	Beijing Qianjunfang Fungi Science Research Institute	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Method for producing plant-based yogurt by fermenting soybean milk with specific lactic acid bacteria combination which utilizes a combination of soybean milk and lactic acid strains to develop a natural plant-based yogurt that can inhibit the activity of [alpha]-glucosidase without side effect	TW202045031A	2020-12-16	Practice university	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Legumes
Application of lithocarpus litseifolius or active extract thereof	CN111281902A	2020-06-16	Changzhou High-tech Industrial Development Zone Sanwei Industrial Technology Research Institute Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Tea
Production process of pyracantha fortuneana fruit beverage	CN111418749A	2020-07-17	Fang Shikai	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit
Instant nata de coco product and production method thereof	CN111387442A	2020-07-10	Hainan university	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Processing technology of health-preserving fig leaf tea	CN111418678A	2020-07-17	Yantai Vocational College Yantai Rongke Biological Technology Co., Ltd. Yantai Shunzhi Biological Technology Research Institute Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Tea
Preparation method of food made by five kinds of flour	CN111406887A	2020-07-14	He Yixuan	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Cereals Legumes
Dietary supplement, preparation and application of dietary supplement and preparation	CN111345467A	2020-06-30	Xi'an Ruyou Trading Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract Oligosaccharide	Konjac
Production process of crisp chicken floss	CN111357948A	2020-07-03	Zhangzhou Xinyang Food Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	N/A	Meat
Folic acid reinforced peony seed oil composite solid beverage	CN111387398A	2020-07-10	Luoyang Muxian Industrial Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Oils / Fats / Lipids	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Edible and medicinal shiitake mushroom product and processing method thereof	CN111466570A	2020-07-31	Anhui Spree Biological Technology Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Polysaccharide	N/A
Inulin condensed milk and preparation method thereof	CN111213714A	2020-06-02	Qinghai Province Light Industry Research Institute Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Polysaccharide	Dairy
Peony alpha linolenic acid oil and peptide-containing nutrition product and preparation method thereof	CN111317139A	2020-06-23	Shandong Beizhou Biological Technology Co., Ltd.	Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Protein / Peptide / AA Oils / Fats / Lipids	Legumes
Composition containing camellia oil and application of composition	CN111329928A	2020-06-26	Zunyi Medical University Zhuhai Campus	Glycaemic control Fatty Liver / NAFLD Dyslipidaemia	Oils / Fats / Lipids	Tea
Novel lactic acid bacterium derived from amur cork trees inhabiting shirakami mountaneous region	WO2021002449A1	2021-01-07	HIROSAKI UNIVERSITY I LAVIEPRE CO., LTD.	Glycaemic control Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Bacteroides and application thereof	CN111714522A	2020-09-29	Institute of Microbiology, Chinese Academy of Sciences	Glycaemic control Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Prebiotic formula prepared from germ-remaining rice skin of Haihong fragrant rice for hypertension and hyperglycemia	CN111713706A	2020-09-29	Yin Songhai	Glycaemic control Hypertension / High Blood Pressure / CVD	Fibre	Cereals
Pepino melon yoghurt and preparation method thereof	CN111213720A	2020-06-02	Nanjing Zhenweikang Biotechnology Co., Ltd.	Glycaemic control Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Dairy Ginseng
Physiological function active agent and application thereof	CN111700920A	2020-09-25	Ronghemeng (Fujian) Biotechnology Co., Ltd.	Glycaemic control Hypertension / High Blood Pressure / CVD	Misc Plant Extract Beta glucan	N/A
Quinoa peptide and preparation method and application thereof	CN109234344B	2020-11-10	Jilin Agricultural University	Glycaemic control Hypertension / High Blood Pressure / CVD	Protein / Peptide / AA	Cereals
Blood orange cake rich in anthocyanin and preparation method	CN111358001A	2020-07-03	Neijiang Teachers College	Glycaemic control Obesity / Body composition	Anthocyanins	Misc vegetable / fruit
Preparation method of low-calorie healthy syrup	CN111567785A	2020-08-25	Qiqihar University	Glycaemic control Obesity / Body composition	Misc Plant Extract	N/A
Hulless barley, chenopodium quinoa, oat, buckwheat and wheat steamed dumplings and making method thereof	CN111657427A	2020-09-15	Min Zhijun	Glycaemic control Obesity / Body composition	N/A	Cereals Ginger

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Purification process for mangosteen-polysaccharide solid beverage capable of reducing blood sugar and assaying experimental method	CN111357909A	2020-07-03	Jilin Agricultural Science and Technology College	Glycaemic control Obesity / Body composition	Polysaccharide	Misc vegetable / fruit
A novel probiotic sweet for diabetic patients and process thereof	IN202011046002A	2020-11-06	LOVELY PROFESSIONAL UNIVERSITY	Type II Diabetes	Microbe / probiotic	N/A
Microbial compositions and methods for treating type 2 diabetes, obesity, and metabolic syndrome	US20200376049A1	2020-12-03	SOLAREA BIO, INC.	Type II Diabetes	Microbe / probiotic	Misc vegetable / fruit
Antidiabetic or antiatopic dairy products comprising Bifidobacterium longum and hop extract	KR102124704B1	2020-06-19	Cheongwon Natural Land Co., Ltd.	Type II Diabetes	Microbe / probiotic	Dairy
Application of lactobacillus reuteri	CN111346114A	2020-06-30	Shenzhen Huada Agricultural Application Research Institute Shenzhen Huada Sanshengyuan Technology Co., Ltd.	Type II Diabetes	Microbe / probiotic	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Use of <i>Pediococcus pentosaceus</i>	CN111345345A	2020-06-30	Shenzhen Huada Agricultural Application Research Institute Shenzhen Huada Sanshengyuan Technology Co., Ltd.	Type II Diabetes	Microbe / probiotic	N/A
<i>Lactobacillus plantarum</i> strain, soy milk produced by fermentation based on the strain, and production method thereof	CN109517767B	2020-07-10	Beijing Agricultural College	Type II Diabetes	Misc Plant Extract Microbe / probiotic	Legumes
Production method of functional dripbag coffee containing buckwheat	KR1020200081010A	2020-07-07	Roum & Company Co., Ltd.	Type II Diabetes	Rutin Quercetin	Cereals
Manufacturing method of <i>Allium senescens</i> and <i>Sanguisorba officinalis</i> L. and Pharmaceutical Composition and composition for improving metabolic syndrome induced from obesity and obesity comprising the extract as an active ingredient	KR102200260B1	2021-01-07	Hallym University Industry-Academic Cooperation Foundation	Type II Diabetes Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Potentilla glabra black tea	CN111374192A	2020-07-07	Xu Junshou	Type II Diabetes Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Tea
Bifidobacterium adolescentis CCFM1061, its fermented food and preparation method of bacterial agent	CN110331118B	2020-12-15	Jiangnan University	Type II Diabetes Fatty Liver / NAFLD	Microbe / probiotic	N/A
Composition for prevention and treatment of lipid-related metabolic disease comprising lactobacillus plantarum ATG-K2 or lactobacillus plantarum ATG-K6	KR102163551B1	2020-10-07	A2Gen Co., Ltd.	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition	Microbe / probiotic	N/A
Novel lactobacillus having effect of reducing body weight or body fat and use thereof	WO2020130471A1	2020-06-25	DONG WHA PHARM. CO., LTD. I UNIVERSITY-INDUSTRY COOPERATION GROUP OF KYUNGHEE UNIVERSITY	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Akkermansia muciniphila eb-amdk19 strain and use thereof	WO2021040187A1	2021-03-04	ENTEROBIOME INC.	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Akkermansia muciniphila eb-amdk27 strain and use thereof	WO2021040186A1	2021-03-04	ENTEROBIOME INC.	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
A composition for preventing, treating, or improving metabolic syndrome and obesity-related metabolic syndrome comprising the Propionibacterium freudenreichii MJ2 strain as an active ingredient	KR102154124B1	2020-09-09	Korea University Industry-Academic Cooperation Foundation	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Composition for preventing and treating of obesity or metabolic disease comprising extract from Jeju Udo peanut Sprouts	KR102199537B1	2021-01-07	Jeju National University Industry-Academic Cooperation Foundation	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Misc Plant Extract	Legumes
Composition for preventing, improving or treating metabolic syndrome including obesity, diabetes, hyperlipidemia and fatty liver	KR102143084B1	2020-08-11	Nutracore Co., Ltd.	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Misc Plant Extract	Cereals Misc Herbs / Spices

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
A composition for improving, preventing and treating obesity and metabolic disease comprising polysaccharide fraction isolated from persimmon leaf	KR1020200138467A	2020-12-10	Korea Food Research Institute	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Misc Plant Extract	N/A
A composition for improving, preventing and treating obesity and metabolic disease comprising polysaccharide fraction isolated from barley leaf	KR1020200137193A	2020-12-09	Korea Food Research Institute	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia	Misc Plant Extract	Cereals
Ligularia ligulatus fat-soluble extract, preparation method and application thereof	CN110194754B	2020-11-03	Capital Medical University	Type II Diabetes Fatty Liver / NAFLD Obesity / Body composition Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	N/A
Lactobacillus for lowering blood glucose MG5012	KR102123838B1	2020-06-17	Mediogen Co., Ltd. Namsoo Paik	Type II Diabetes Glycaemic control	Microbe / probiotic	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Lactobacillus casei for prevention and auxiliary treatment of type II diabetes and application of lactobacillus casei	CN111575202A	2020-08-25	Beijing Ketuo Hengtong Biotechnology Co., Ltd.	Type II Diabetes Glycaemic control	Microbe / probiotic	N/A
Hypoglycemia improving agent and composition for improving hypoglycemia	JP6747724B2	2020-08-26	Life Quality Research Institute Co., Ltd.	Type II Diabetes Glycaemic control	Microbe / probiotic	N/A
A composite probiotic and its application	CN109628358B	2021-03-19	Infinitus (China) Co., Ltd.	Type II Diabetes Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Microbe / probiotic	N/A
Sea buckthorn fruit functional beverage and preparation method thereof	CN111213796A	2020-06-02	Nanjing Zhenweikang Biotechnology Co., Ltd.	Type II Diabetes Glycaemic control Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Seabuckthorn
Akkermansia muciniphila and composition for controlling appetite or preventing, improving, relieving and treating metabolic disease comprising the same	KR102197180B1	2020-12-31	Go Bio Lab Co., Ltd.	Type II Diabetes Glycaemic control Obesity / Body composition	Microbe / probiotic	N/A

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Cyperus esculentus blended soymilk and producing method thereof	CN111264626A	2020-06-12	Chen Shijin	Type II Diabetes Glycaemic control Obesity / Body composition	Misc Plant Extract	Legumes
Phascolarctobacterium faecium for use in the prevention and treatment of obesity and its comorbidities	WO2020109646A1	2020-06-04	CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS (CSIC)	Type II Diabetes Glycaemic control Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Probiotic composition and use thereof	US20200261515A1	2020-08-20	INFINITUS (CHINA) COMPANY LTD.	Type II Diabetes Glycaemic control Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Composition for anti-oxidation, anti-inflammation, anti-diabetes, or anti-wrinkle comprising extract of Hwangok apple peel	KR1020210032370A	2021-03-24	Kyungpook National University Industry-Academic Cooperation Foundation	Type II Diabetes Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit
Composition for anti-oxidation, anti-inflammation, anti-diabetes, whitening, anti-wrinkle, or anti-gout comprising extract of Honggeum apple peel	KR1020210032369A	2021-03-24	Kyungpook National University Industry-Academic Cooperation Foundation	Type II Diabetes Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for anti-oxidation, anti-inflammation, anti-diabetes, or anti-wrinkle comprising extract of Summer king apple peel	KR1020210032368A	2021-03-24	Kyungpook National University Industry-Academic Cooperation Foundation	Type II Diabetes Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc vegetable / fruit
Composition comprising Lactobacillus plantarum BK-021 for preventing or treating diabetes mellitus or vascular disease	KR102220543B1	2021-02-26	Biggert Lactobacillus Co., Ltd. Korea Food Industry Cluster Promotion Agency	Type II Diabetes Hypertension / High Blood Pressure / CVD Stroke	Microbe / probiotic	N/A
Oat fermentation compound beverage and preparation method thereof	CN111296700A	2020-06-19	Yang Qiongying	Type II Diabetes Obesity / Body composition	Microbe / probiotic Fibre	Cereals
Pharmaceutical composition comprising extract of fermented ginger for prevention or treatment of metabolic disease	KR102118059B1	2020-06-03	Kyungpook National University Industry-Academic Cooperation Foundation	Type II Diabetes Obesity / Body composition	Misc Plant Extract	Ginger

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
Composition for preventing, improving or treating metabolic syndrome accompanying obesity and/or diabetes comprising a complex of <i>Emblica officinalis</i> extract and <i>Hordeum vulgare</i> extract (IB Complex) as an active ingredient	KR1020200138003A	2020-12-09	HL Science Co., Ltd.	Type II Diabetes Obesity / Body composition	Misc Plant Extract	Cereals Misc vegetable / fruit
Instant braised <i>polygonatum odoratum</i> food and preparation method thereof	CN111602809A	2020-09-01	Jianchangbang Pharmaceutical Co., Ltd.	Type II Diabetes Obesity / Body composition	Misc Plant Extract	N/A
Composition for Prophylaxis and Treatment of Osteoporosis, Diabetes and Obesity Comprising Fermented <i>Tremella fuciformis</i> Berk.	KR1020200065170A	2020-06-09	Kyochon F&B Co., Ltd.	Type II Diabetes Obesity / Body composition	N/A	N/A
Compound nut concentrated solution and production process and application thereof	CN111513289A	2020-08-11	Hangzhou Naique Biological Technology Co., Ltd.	Type II Diabetes Obesity / Body composition	Oils / Fats / Lipids	Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
High-quality isinglass gelatin powder and preparation method thereof	CN111387474A	2020-07-10	Jiangxi Normal University	Type II Diabetes Obesity / Body composition	Protein / Peptide / AA Pectin	Seafood / Marine
Food additive	CN111213889A	2020-06-02	Zhang Yunyun	Type II Diabetes Obesity / Body composition Dyslipidaemia	Fibre Beta glucan Pectin	N/A
Use and composition of lactobacillus gasseri in the prevention and/or treatment of metabolic diseases	HK40020973A	2020-10-30	Shenzhen BGI Institute of Life Sciences	Type II Diabetes Obesity / Body composition Dyslipidaemia	Microbe / probiotic	N/A
Fermented product of lactic acid bacteria with improved physiological activity	KR1020200072619A	2020-06-23	Republic of Korea	Type II Diabetes Obesity / Body composition Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Misc Herbs / Spices
Functional health food composition for Preventing and Improving Obesity and metabolic disease fermented fagopyrum tataricum extract	KR1020210019915A	2021-02-23	Cosmax Bio Co., Ltd.	Type II Diabetes Obesity / Body composition Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	Cereals Misc vegetable / fruit

Title	Publication Number	Publication Date	Owner	Health Focus	Primary actives	HVN Food link
A fermented cereal hydrolyzed peptide for preventing and/or treating metabolic syndrome and its uses in food and pharmaceutical compositions	TWI705977B	2020-10-01	TAIWAN TOBACCO	Type II Diabetes Obesity / Body composition Dyslipidaemia Hypertension / High Blood Pressure / CVD	Protein / Peptide / AA	Cereals
Application of plant selenium peptide in preparation of composition for improving obesity and metabolic syndrome	CN111493325A	2020-08-07	Enshi Deyuan Health Technology Development Co., Ltd.	Type II Diabetes Obesity / Body composition Dyslipidaemia Hypertension / High Blood Pressure / CVD	Protein / Peptide / AA	N/A
Preparation method of inonotus obliquus instant tea	CN111937994A	2020-11-17	Heilongjiang Chengxin Technology Co., Ltd.	Dyslipidaemia Hypertension / High Blood Pressure / CVD	Misc Plant Extract	N/A
Composition for preventing or treating fatty liver or metabolic syndrome comprising Lactococcus chungangensis	KR102185408B1	2020-12-01	Chung-Ang University Industry-Academic Cooperation Foundation	Fatty Liver / NAFLD	Microbe / probiotic	N/A

6. THE EXTRA STUFF

6.1. Searching and Refinement Process

The search and refinement process was carried out in the following steps:

- Preparation of search criteria including key words and International Patent Classifications (IPCs) to target subject matter of interest, testing and refining to ensure relevant subject matter found. Searching using Boolean search criteria within PatSnap software accessing over 130 million published patents globally, to develop an initial raw dataset of patent families. The search and the results of this report captures new patents published between 2 June 2020 to 6 April 2021, and with a priority date after 6 April 2018.
- From a total of 743 raw search results, we filtered these down to 228 patent families that we deemed relevant to HVN's Metabolic Health platform based on the subject matter defined in [Section 1.3](#). A total of 210 patents relating to traditional herbal medicines were also separated out and kept as a different dataset which may be accessed as needed.
- We then further classified each “relevant” patent by the health target(s), type of active(s), and type of food(s). Each relevant patent was then classed as Bull's Eye, Halo or Background as previously defined in section 1.3. The list of all relevant patents and links to the full text are provided in Sections 3-5.

6.2. Author of this Report

This updated report was prepared by Dr. Peter Brown, Director of IPSynergy (www.IPSynergy.co.nz). Peter is a registered patent attorney in NZ and Australia, holds a PhD in protein biochemistry and has substantial commercial experience dealing with food science, innovation and IP strategies. If you have any questions regarding this report, please feel free to contact Peter (peter.brown@ipsynergy.co.nz).