

**Supplementary Table 4** Plant bioactivities and their phytochemical extracts of ND relevance demonstrated in human clinical studies

Bioactivity	Species	Reference
Anti-bacterial	<i>Malus sylvestris</i>	Ihsan et al., 2018
Anti-DNA damage/improved DNA repair	<i>Olea europaea</i> <i>Uncaria tomentosa</i>	Salvini et al., 2006 Sheng et al., 2001
Anti-hypertensive	<i>Achillea santolinoides</i> <i>Allium cepa</i> <i>Allium sativum</i> <i>Alstonia scholaris</i> <i>Beta vulgaris</i> <i>Cinnamomum cassia*</i> <i>Crataegus curvisepala</i> <i>Fagopyrum esculentum</i> <i>Hibiscus sabdariffa</i> <i>Leonurus cardiaca</i> <i>Mentha longifolia</i> <i>Olea europaea</i> <i>Panax quinquefolius</i> <i>Phyllanthus emblica</i> <i>Pisum sativum</i> <i>Prunella vulgaris</i> <i>Punica granatum</i> <i>Solanum lycopersicum</i> <i>Solanum tuberosum</i> <i>Theobroma cacao</i>  <i>Urtica dioica</i> <i>Viola odorata</i>	Asgary et al., 2000 Brüll et al., 2015 Ried et al., 2010 Bhogayata et al., 2009 Raubenheimer et al., 2017 Akilen et al., 2010 Asgary et al., 2004 Zhang HW et al., 2007 Nwachukwu et al., 2015 Shikov et al., 2011 Samaha et al., 2019 Susalit et al., 2011 Mucalo et al., 2013 Ghaffari et al., 2020 Li H et al., 2011b Zheng H, 2018 Asgary et al., 2013 Paran et al., 2009 Vinson et al., 2012 Taubert et al., 2007 Desideri et al., 2012 Samaha et al., 2019 Samaha et al., 2019
Anti-hyperlipidemic/cholesterol-lowering	<i>Achillea santolinoides</i> <i>Agrimonia eupatoria</i> <i>Chenopodium quinoa</i> <i>Fagopyrum esculentum</i> <i>Olea europaea</i> <i>Punica granatum</i> <i>Salvia officinalis</i>	Asgary et al., 2000 Ivanova et al., 2013 De Carvalho et al., 2014 Zhang HW et al., 2007 Verhoeven et al., 2015 Kojadinovic et al., 2017 Kianbakht et al., 2011
Anti-inflammatory	<i>Agrimonia eupatoria</i> <i>Aloe vera</i> <i>Ananas comosus</i>  <i>Andrographis paniculata</i> <i>Bertholletia excelsa</i> <i>Beta vulgaris</i> <i>Boswellia serrata</i> <i>Cinnamomum verum</i> <i>Olea europaea</i> <i>Passiflora edulis</i> <i>Phyllanthus amarus</i> <i>Prunella vulgaris</i> <i>Punica granatum</i> <i>Rosa canina</i> <i>Sambucus ebulus</i> <i>Scutellaria baicalensis</i>  <i>Solidago chilensis</i> <i>Symphytum officinale</i> <i>Tamarindus indica</i> <i>Uncaria guianensis</i> <i>Uncaria tomentosa</i> <i>Urtica dioica</i> <i>Zataria multiflora</i> <i>Zingiber officinale</i>	Ivanova et al., 2013 Reddy et al., 2012 Akhtar et al., 2004 Ordesi et al., 2014 Sandborn et al., 2010 Stockler-Pinto et al., 2014 Raubenheimer et al., 2017 Sontakke et al., 2007 Zareie et al., 2020 Lockyer et al., 2015 Farid et al., 2010 Decha et al., 2019 Song YW et al., 2007 Ghavipour et al., 2017 Warholm et al., 2003 Jabbari et al., 2016 Arweiler et al., 2011 Orzechowska et al., 2014 da Silva et al., 2010 Petersen et al., 1993 Rao PS et al., 2019 Piscoya et al., 2001 Mur E et al., 2002 Jacquet et al., 2009 Ariaee et al., 2018 Kulkarni and Deshpande, 2016
Anti-oxidant	<i>Campomanesia speciosa</i> <i>Olea europaea</i>	Viecili et al., 2014] Oliveras-López et al., 2013
Anti-PD	<i>Apium graveolens</i> <i>Glycyrrhiza glabra</i> <i>Mucuna pruriens</i>	Zhou H et al., 2019 Petramfar et al., 2010 Katzenschlager et al., 2004]
Anti-viral	<i>Ficus carica</i> <i>Glycyrrhiza glabra</i>	Bohlooli et al., 2007 Mori et al., 1990

	<i>Myrtus communis</i> <i>Pelargonium sidoides*</i> <i>Rosa canina</i> <i>Sambucus nigra</i>  <i>Zingiber officinale</i>	Minaei et al., 2014] Lizogub et al., 2007 Winther et al., 2018] Zakay-Rones et al., 2004 Hawkins et al., 2019 San Chang et al., 2013
Anxiolytic/mood modulation	<i>Lactuca serriola</i> <i>Matricaria chamomilla</i> <i>Melissa officinalis</i> <i>Valeriana officinalis</i> <i>Withania somnifera</i>	Ghazala et al., 2009 Amsterdam et al., 2009 Kennedy et al., 2002 Gharib et al., 2015 Lopresti et al., 2019
Cardioprotective/anti-congestive heart failure	<i>Terminalia arjuna</i>	Dwivedi and Agarwal, 1994 Bharani et al., 1995
Cognitive/memory improvement	<i>Acacia catechu*</i> <i>Allium cepa</i> <i>Bacopa monnieri</i> <i>Boswellia serrata</i> <i>Centella asiatica</i> <i>Juglans regia</i> <i>Melissa officinalis</i> <i>Olea europaea</i> <i>Panax quinquefolius</i>  <i>Rosmarinus officinalis</i>  <i>Salvia officinalis</i>  <i>Theobroma cacao</i>  <i>Tinospora cordifolia</i> <i>Vaccinium angustifolium</i> <i>Vaccinium sp.</i> <i>Vitis vinifera</i> <i>Withania somnifera</i> <i>Zingiber officinale</i>	Yimam et al., 2016 Nakagawa et al., 2016 Kumar N et al., 2016 Taghizadeh et al., 2018 Wattanathorn et al., 2008 Arab and Ang, 2015 Perry NS et al., 2018 Valls-Pedret et al., 2015 Scholey et al., 2010 Ossoukhova et al., 2015 Nematollahi et al., 2018 Perry NS et al., 2018 Perry et al., 2003 Akhondzadeh et al., 2003 Taubert et al., 2007 Desideri et al., 2012 Bairy et al., 2004 Krikorian et al., 2010] Whyte et al., 2018 Bensalem et al., 2019 Choudhary D et al., 2017 Saenghong et al., 2012
Endothelial progenitor cell mobilization/ anti-platelet aggregation/ Improved endothelial function	<i>Apium graveolens</i> <i>Campomanesia speciosa</i> <i>Malus pumila</i> <i>Zingiber officinale</i>	Zhao H et al., 2016 Otero et al., 2017 Bondonno et al., 2018 Young et al., 2006
GM1 Gangliosidosis reversed disease progression/increased survival	<i>Morus alba</i>	Deodato et al., 2017 Utz et al., 2017
Immunostimulatory	<i>Panax japonicus</i>	Hyun et al., 2021
Improved retinal function/glaucoma patients improved visual acuity	<i>Camellia sinensis</i> <i>Vaccinium myrtillus</i> <i>Vitis vinifera</i>	Falsini et al., 2009 Shim et al., 2012 Richer et al., 2014
Increased Nrf2	<i>Bertholletia excelsa</i>	Cardozo et al., 2016
Improved neurological function in Friedreich's ataxia patients	<i>Vitis vinifera</i>	Yiu et al., 2015
Motor improvement	<i>Mucuna pruriens</i>	Cilia et al., 2017
Reduced arterial stiffness	<i>Carthamus tinctorius</i>	Suzuki et al. 2010
Reduced CSF amyloid $\beta$ 40	<i>Vitis vinifera</i> [resveratrol]	Turner et al., 2015
Neurogenic	<i>Aloe vera</i>	Malayeri et al., 2021
NPC disease increased survival	<i>Morus alba</i>	Walterfang et al., 2012 Patterson et al., 2020
Reduced MS disease activity	<i>Boswellia spp</i> <i>Fumaria officinalis</i> [dimethyl fumarate]	Stürner et al., 2018] Fernández et al., 2017
Reduced symptoms of fatigue	<i>Panax quinquefolius</i>	Barton et al., 2013
Wound healing	<i>Calendula arvensis</i> <i>Calendula officinalis</i> <i>Pelargonium roseum</i> <i>Withania somnifera</i>	Lavagna et al., 2001 Pommier et al., 2004 Panah et al., 2012 Sheoran et al., 2020

\* sister species

References can be found in Supplementary File 7: References