

Supplemental Table 1 – Approved Direct Natural Product NCE's*

NP Lead, year	Company	Drug, year	Indication/MOA	Yearly Sales
Validamycin, 1970	Takeda (JAP)	Acarbose, 1990 Voglibose, 1994	Anti-diabetic/glucosidase inhibitor	35 MM, 2007 450 MM, 2007
Midecamycin, 1971	Meiji (JAP)	Miocamycin, 1985	Antibacterial/protein synthesis inhibitors	12 MM, 2007
Pseudomonic acid, 1971	Beecham (UK)	Mupirocin, 1995	Antibacterial/protein and RNA synthesis inhibitors	77 MM, 2005
Taxol, 1971	BMS	Paclitaxel, 1993 Carbazitaxel, 2010	Oncology/antimitotic	1.6 BB, 2000
Taxotere	Sanofi-Aventis	Docetaxel, 1995	Oncology/antimitotic	2 BB,
Cephamicin C, 1971	Lilly	Moxalactam, 1982 Cefotetan, 1984 Cefbuperazone, 1985	Antibacterial/ gram-negative cell wall inhibitor	2MM, 2007
Coformycin, 1974	Inst Microbial Chem (JAP)	Pentostatin, 1992	Oncology/ adenosine deaminase inhibitor	7MM, 2007
Echinocandin B, 1974	Ciba-Geigy	Caspofungin, 2001 Micafungin, 2002 Anidulafungin, 2006	Antifungal/glucan synthase inhibitor	596MM, 2008
Mizoribine, 1974	Toyo (JAP)	Mizoribine, 1984	Immune suppression / T-and B-cell proliferation inhibitor	60 MM, 2008
Rapamycin, 1974	Ayerst (CAN)	Sirolimus, 1999 Everolimus, 2004 Zotatolimimus, 2005 Temsirrolimus, 2007	Immune suppression/mTOR	365 MM, 2007 96MM, 2008
Compactin, 1975	Sankyo (JAP)	Lovastatin, 1984 Simvastatin, 1988 Pravastatin, 1989 Fluvastatin, 1994 Atorvastatin, 1997 Cerivastatin, 1997 Pitavastatin, 2003 Rosuvastatin, 2003	Hypolipidemic agent/HMG-CoA reductase	1 BB, 1995 5.6 BB 2002 2.3BB, 2005 715MM, 2007 12.4BB, 2008 550MM, 2000 61MM, 2008 908MM, 2004
Cyclosporine A, 1975	Sandoz (SWI)	Ciclosporine, 1983	immune suppression /IL-2 inhibitor	1BB, 2005
Lipstatin, 1975	Roche (SWI)	Orlistat, 1987	Obesity/Lipase inhibitor	100MM,
Bestatin, 1976	Inst Microbial Chem (JAP)	Ubenimex, 1987	AML/aminopeptidase B inhibitor	
Thienamycin, 1976	Merck (USA)	Imipenem, 1985 Meropenem, 1994 Panipenem, 1994 Faropenem, 1997 Biapenem, 2002 Ertapenem, 2002 Doripenem, 2005	Antibacterial/cell wall inhibitor	765MM, 2008 1.04BB, 2008 31MM, 2007 27MM, 2008 97MM, 2008
Artemisinin, 1977	Qinghaosu Res Grp (PRC)	Artemisinin, 1987 Artemether, 2009	Antimalarial/MOA unclear	
Sesquiterpene		Artemether, 1987 Artenusate, 1987 Arteether, 2000	Antimalarial/MOA unclear	
Forskolin, 1977	Hoechst (IND)	Colforsin, 1999	Cardiac failure/adenylate cyclase inhibitor	
Plaunotol, 1977	Sankyo (JAP)	Plaunotol, 1987	Anti-ulcer/Bacterial cell membrane	20MM, 2008
Avermectin B1a, 1979	Kitastato Inst & Merck	Ivermectin, 1987	Antiparasitic/Glutamate-gated chloride channel	500MM,
SQ26180, 1981	Squibb (USA)	Aztreonam, 1984 Carumonam, 1988	Antibacterial/mucopeptide synthesis inhibitor	
Spergualin, 1981	Inst Microbial Chem (JAP)	Gusperimus, 1994	Immune suppression/IL-2 inhibitor	
Arglabin, 1982	Inst Phytochem	Arglabin, 1999	Oncology/FTase inhibitor	
FK506, 1984	Fujisawa (JAP)	Tacrolimus, 1993	Immune suppression/T-lymphocyte activation inhibitor	2.4BB, 2007
Daptomycin, 1986	Lilly (USA)	Daptomycin, 2003	Antibacterial/cell wall inhibitor	450MM, 2008
Calicheamicin γ 1, 1988	Lederle (USA)	Gemtuzumab, 2000	Oncology/ cytotoxin-Mab conjugate	95MM, 2008

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Epothilone B	BMS	Ixabepilone, 2007	Oncology/antimicrotubulic	101MM, 2008
Vancomycin	Astellas	Televancin, 2009	Antibacterial/cell wall	18MM, 2011 (est.)
Myriocin	Novartis	Gilenya, 2010	Multiple sclerosis/S1P1 inhibitor	350MM, 2011
Halochondrin B	Eisai	Eribulin, 2010	Oncology/ antimitotic	157MM, 2012 (est.)
Dolastatin	Seattle Genetics	Adcetris, 2011	Oncology/cytotoxin-MAb	New launch
Clostromicin B1	Optimer	Fidaxomicin	Antibacterial	New launch

*Adapted from Ganesan, reference 4. Yearly sales figures derived from multiple sources – Pharma corporate annual reports, Pharma industry reports and databases such as Scrip WorldWide Pharmaceutical News.