zymtronix™
NEXT WAVE BIOCATALYSIS

CASE STUDY

THE IMMOBILIZATION OF NITRILASES

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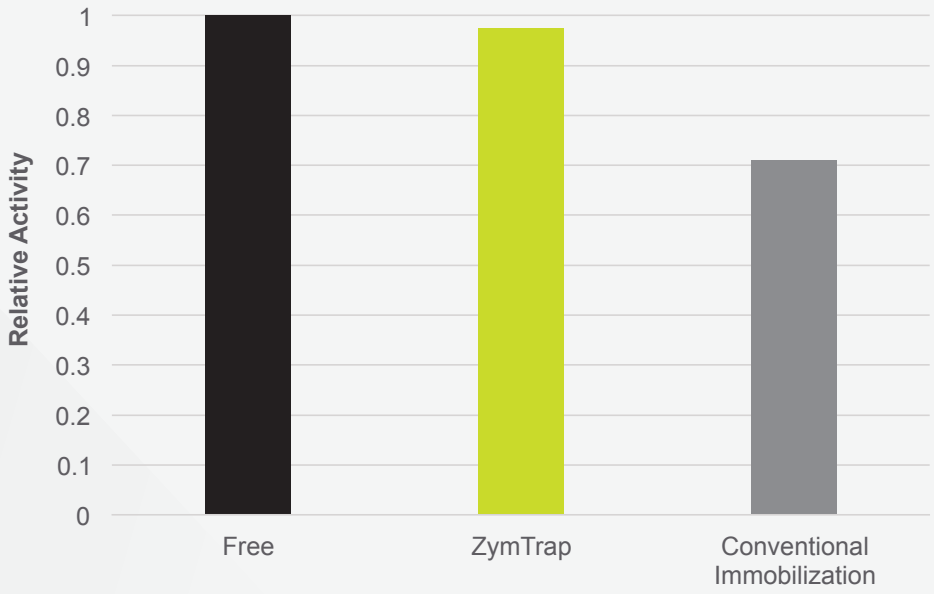
Nitrilases (EC 3.5.5.1) catalyze the reaction of nitrile compounds (-C≡N) to corresponding carboxylic acids, liberating ammonia. These enzymes are active on diverse nitrile compounds, some of whose corresponding carboxylic acids are of industrial significance [1]. Nitrilases have been utilized to produce nicotinic acid, also known as vitamin B_3 or niacin, from 3-cyanopyridine [2]. Nicotinic acid has application as a nutritional supplement in foods and as a pharmaceutical intermediate. Nitrilases are also capable of detoxifying cyanide-containing waste products due to the structural similarities between nitrile and cyanide compounds [3].

Using its ZymTrap™ system, Zymtronix has demonstrated 98% retained activity of a magnetically-immobilized nitrilase relative to its free counterpart (Figure 1), specifically for the nicotinic acid producing reaction described above [4].
In comparison, a comparable nitrilase immobilized on agar-agar retained about 71% activity relative to free enzyme. [3]

Figure 1 - Nitrilase Performance



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