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### Title: Heterogeneous catalysis in oxidation of lignin model compounds

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In the last few years, challenges such as global warming, high oil prices and food crisis have concerned more to population, so extensive research and development programs has been carried out to try to put a solution on these problems. One of the possible solutions is lignocellulosic biomass, which does not compete with food resources and is widely available as a low cost feedstock.

Lignocellulose biomass is composed by 3 main fractions; cellulose (40-50%), hemicellulose (25-35%) and lignin (20-30%). Lignin represents 40% of the heating value lignocellulosic biomass and it is the obvious candidate to serve as an available feedstock for the production of basic aromatic chemicals. [1]

Lignin composition, molecular weight and amount differ from plant to plant, but 3 different monolignol monomers compose it; *p*-coumaryl, coniferyl and sinapyl alcohol. [2]

Furthermore lignin has in common lots of different linkages (Figure 1). The most common of these linkages is the  $\beta$ -O-4. [3]

As seen, lignin structure is complex, so different model compounds are used to study lignin valorization. These model compounds contain linkages that found in the lignin, simplifying catalytic analysis and present fewer analytical challenges relative to the complicated lignin polymer and the plethora of products that could be obtained. [2]

Heterogeneous oxidative catalyst plays an important role due to the presence of hydroxyl groups. [4]

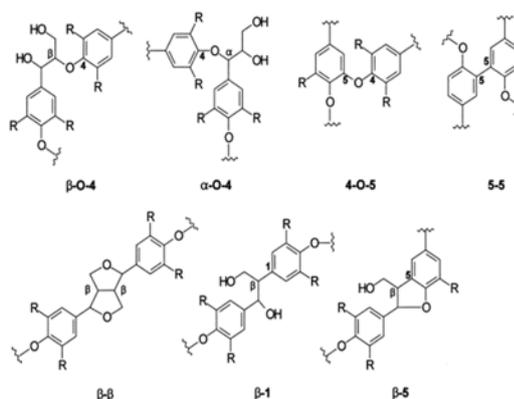


Figure 1. Linkages present in lignin

Heiko Lange et al., has reported that the catalytic oxidation products of lignin and lignin model compounds range from aromatic aldehyde and carboxylic acid and they must be originate form oxidation of side chain. The products we obtained in these reactions are based on the severity of the reaction conditions. [5]

Here, we therefore present an overview of the recent research about conversion of some lignin model compounds using heterogeneous catalysis in oxidation reactions.

## REFERENCES

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- [5] Heiko Lange et al., *European Polymer Journal*, 49 (2013) 1151